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THE FISHES

OF THE

FAMILY SCORPAENIDAE

IN THE

WESTERN INDIAN OCEAN

PART I. THE SUB-FAMILY SCORPAENINAE

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Honolulu, HI 96822-2396

by

J. L. B. SMITH

Research Professor and South African Council
for Scientific and Industrial Research Fellow in Ichthyology

Illustrations by Margaret M. Smith

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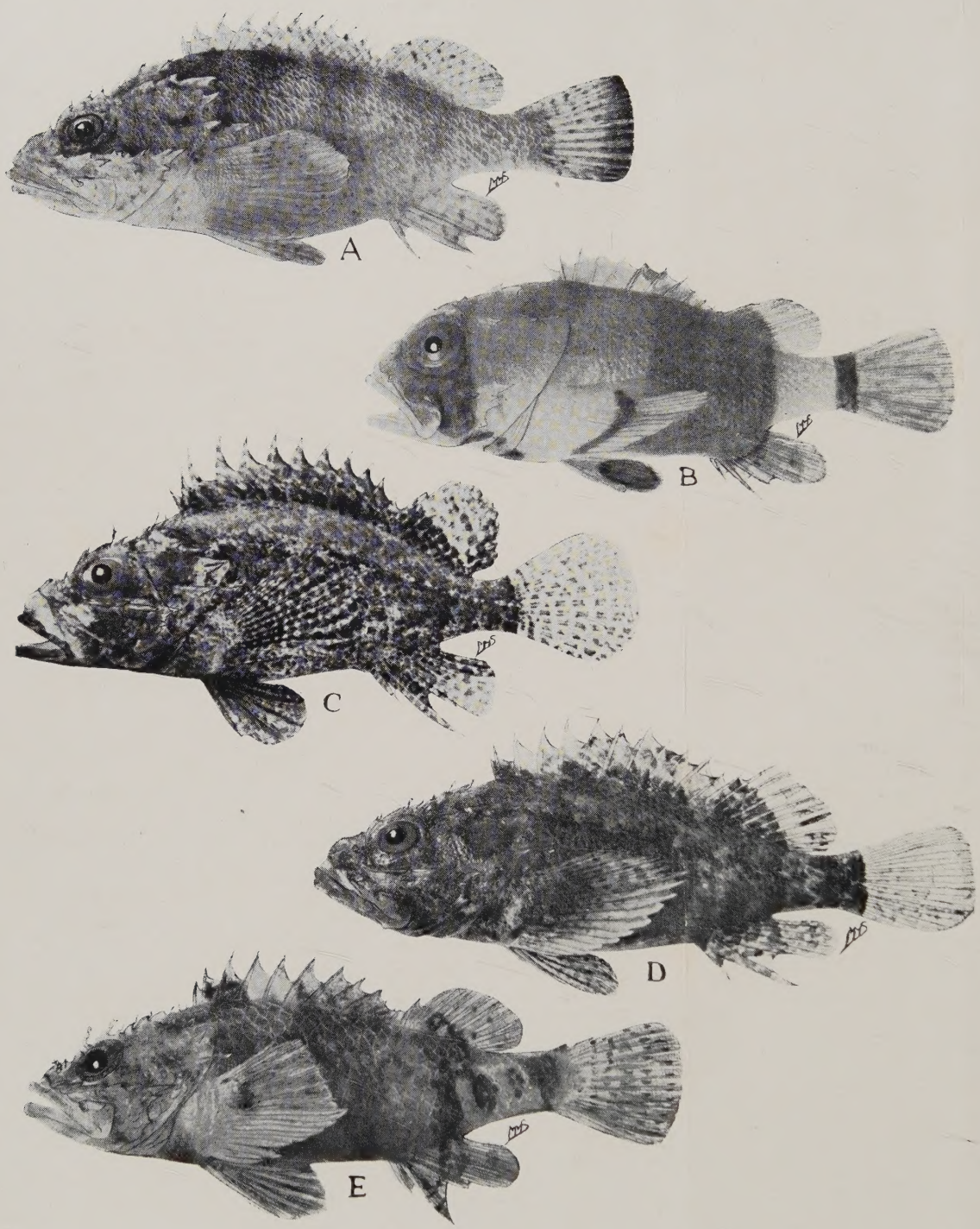

PLATE I.

(A) Scorpaenodes parvipinnis (Garrett). 100mm. (B) Scorpaenodes parvipinnis (Garrett). 20mm. (C) Scorpaenodes guamensis (Q. & G.) ("scabra" type). 70mm. (D) Scorpaenodes guamensis (Q. & G.). ("guamensis" type). 65mm. (E) Parascorpaenodes hirsutus n.sp. Type, 56mm.

The Fishes of the Family Scorpaenidae in the Western Indian Ocean

PART 1.—THE SUB-FAMILY SCORPAENIDAE
(With Plates 1—4)

By

J. L. B. SMITH,

Research Professor and South African Council for Scientific and Industrial Research
Fellow in Ichthyology, Rhodes University, Grahamstown.

THE Scorpaenoid fishes of the Western Indian Ocean have hitherto received rather casual treatment, and new species have been described without adequate reference and comparison, most such descriptions and even illustrations lacking information adequate for use in accurate diagnosis by other workers. Over a number of years in numerous expeditions to the Western Indian Ocean we have paid special attention to these neglected, and because of their venomous spines rather dreaded fishes and have amassed a considerable collection on which the present work is based. A number of species are described as peculiar to the Western Indian Ocean. In some cases at least this may be due to inadequate earlier diagnosis, but the full descriptions and illustrations given here will enable the keepers of types and workers in other parts to correlate their material. As far as possible photographs of typical specimens have been given.

Within the order Scleroparei, characterised by the well developed suborbital stay, many systematists pack the typical family Scorpaenidae with an enormous assemblage of fishes, which while showing certain fundamental relationships are so divergent as to render such an arrangement out of keeping with the generally accepted range of a systematic family group. While this large group will eventually doubtless be divided into numerous families of a lesser range, there is adopted here the fairly well defined cleavage into two main groups, based chiefly on the nature of the dorsal fin. These with the closely related families Synanciidae and Caracanthidae form a natural sub-group in the order. The families are simply defined as follows:—

A. Gill membranes free from isthmus.
   - I. Dorsal originates on nape, well behind eye, no spines rooted on cranium. Scales usually present, normal..... **Scorpaenidae**
   - II. Dorsal originates before, above or close behind eye, front spines rooted on cranium. Body typically naked, scales if present rudimentary or small..... **Tetrarogidae**

B. Gill membranes joined to isthmus.
   - I. Pelvics small, rudimentary..... **Caracanthidae**
   - II. Pelvics normal, of a spine and 3–5 rays..... **Synanciidae**

Family Scorpaenidae

Body more or less normal in shape, little, moderately or well compressed, usually with normal scales, ctenoid or cycloid, or both. The head naked or partly or almost fully scaled, sometimes only scales hidden by skin. Lateral line usually complete to caudal base, tubules rarely as numerous as scale rows. The relatively large head with a typical bony ridge below the eye, the "suborbital stay", running from third suborbital bone to the preopercle mostly very obvious and usually with spines. The head normally spiny, sometimes rough and spiny, in some cases spination reduced. Head and sometimes body often with skinny flaps. Mouth fairly large, protractile, with villiform teeth in bands in jaws, on vomer and sometimes on palatines, few enlarged teeth, no canines. No supramaxilla. Gill membranes free from isthmus, 3½ gills, no slit behind last gill. Gillrakers rarely normal, usually few, most low spinate knobs, raker in angle usually longest. Pseudobranchiae present. Dorsal fin along most of back, originates well behind eye, no spines rooted on cranium, spinous part longer than soft, the spines usually well developed, typically with groove each side, possibly function as venom ducts. Soft rays few, usually a notch between end of spinous dorsal and soft fin. Usually 3 (rarely 2) anal spines, the 2nd mostly longest and stoutest. Pectoral always with some simple rays, sometimes all simple. Dorsal spines and pectoral rays sometimes very elongated, free from membrane (Pteroinae). Pelvics normal, of a spine and 5 branched rays. Caudal rounded to truncate. Airbladder usually present. Pyloric caeca few. Vertebrae normally 24 or 25.

Scorpaenid fishes are mostly small, but of characteristic appearance and usually easily recognisable as such. While in some parts a few species are sufficiently large and abundant to be of importance as food, that does not apply in the Western Indian Ocean, where most are small and from the venomous nature of their spines not only greatly

feared but not favoured as food, although the flesh is white and delicate. Most species are purely marine, rarely penetrating far into estuaries, living among rocks, coral and weed, mostly in rather shallow water, a few in deeper water. Most spend much of their time concealed, greatly aided by colour and skinny appendages or enlarged fins. All are carnivorous, the favourite food clearly crustacea, in whose capture they show great skill. Almost all Scorpaenid fishes have venomous spines whose stabs or pricks cause considerable to agonising pain, sometimes transient, but from some species enduring, and the wounded person may suffer considerable ill effects. While most recover, in some cases death has resulted. Any Scorpaenid fish should be treated with as much care as a venomous snake; handling the live fishes with bare hands is foolhardy.

The spination of the head of Scorpaenid fishes is an important feature, and the individual species each generally conforms to a fairly regular pattern which is an aid in diagnosis. Diagrammatic illustrations are given of the heads of a number of species, the sketch below (Fig. 1) indicating the nomenclature usually employed for the spines.

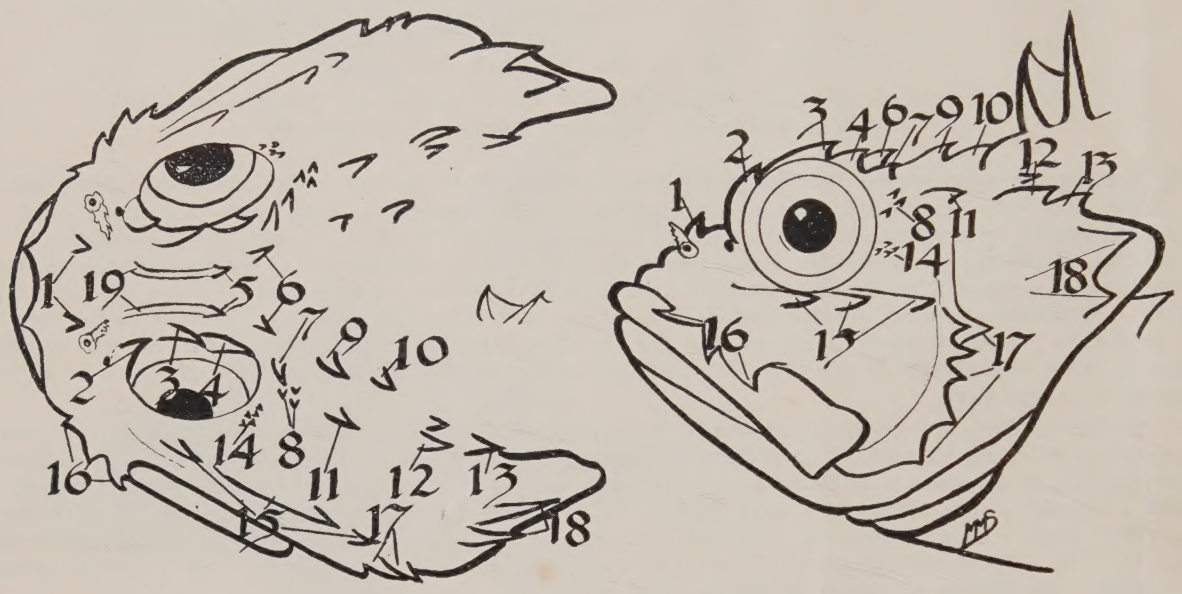

Fig. 1.

Diagrammatic sketch to show nomenclature of spines on head of Scorpaenoid fishes.
Spines:—1. Nasal; 2. Preocular; 3. Supraocular; 4. Postocular; 5. Coronal; 6. Postfrontal; 7. Tympanic; 8. Sphenotic; 9. Parietal; 10. Nuchal; 11. Pterotic; 12. Posttemporal; 13. Humeral; 14. Postorbital; 15. Suborbital; 16. Preorbital; 17. Preopercular; 18. Opercular; 19. Coronal Ridge.

The Scorpaenid fishes of the Western Indian Ocean fall conveniently into 5 sub-families, each with characteristic form defined as follows:—

A. Not more than 11 soft rays in dorsal. Less than 15 gillrakers on lower limb of first arch. Caudal rounded.
  I. Lateral line of normal scales, rarely incomplete. Bones of head not cavernous.
    (a) 11-13 spines in dorsal. No pectoral rays free. At most 1 barbel.
      1. Dorsal spines rarely as long as body depth, all connected by membrane. 2–3 spines on opercle..... **Scorpaeninae**
      2. Dorsal spines separate, usually elongate, more than body depth. One spine on opercle..... **Pteroinae**
    (b) 14–15 spines in dorsal. Lowest pectoral ray free. 3 barbels..... **Apistinae**
  II. Lateral line complete as a raised scaleless tube. Bones of head cavernous..... **Setarchinae**
B. Usually more than 11 soft rays in dorsal. More than 15 true gillrakers on lower limb of first arch. Caudal truncate or emarginate..... **Sebastinae**

Sub-family Scorpaeninae

Mainly small fishes of tidal areas, living in weed and coral, a few from deeper water, all easily recognisable, the rather large head usually very spiny, the soft dorsal much shorter than the spinous part, the pectorals normal, with normally 1–2 upper rays simple, a few below usually divided, the lower rays simple, usually thickened, more numerous than the divided rays. Scales usually distinct, the gillrakers few, most strongly spiny knobs. Caudal usually rounded, rarely truncate. The colours are usually mimetic in shades of brown and red, often with brighter areas, some fishes brilliant. The spines of all able to inflict most painful wounds, but none considered really dangerous. Eleven genera recognised in our area, distinguished as shown below:

GENERA OF THE SUB-FAMILY SCORPAENINAE

A. Lateral line more or less complete to caudal base. (Usually less than 5 suborbital spines).

I. Palatine teeth present.

(a) Scales normal, less than 50 series. No barbel on chin. Less than 20 rays in pectoral.

1. Prepelvic area and most of head entirely naked. Normally more than 7 divided rays in pectoral..... **Scorpaena** (p. 51)

2. Body fully scaled, head with some on opercular area at least. Normally fewer than 7 divided rays in pectoral.

(x) Hind lower preorbital spine retrorse. Scales mostly ctenoid..... **Sebastapistes** (p. 53)

(y) Hind lower preorbital spine hooked forward. Scales cycloid, at most feebly crenulate ..... **Parascorpaena** (p. 57)

(b) More than 50 series of minute scales. A barbel on chin..... **Pogonoscorpius** (p. 59)

II. No palatine teeth.

(a) 12 dorsal spines.

1. Nasal spines present. Body not highly compressed. Scales normal, less than 60 series

(x) A pit below eye. Interorbital broad..... **Scorpaenopsis** (p. 59)

(y) No pit below eye. Interobital narrow..... **Dendroscorpaena nov.** (p. 60)

2. No nasal spines. Body highly compressed. Scales minute..... **Rhinopias** (p. 62)

(b) 13 dorsal spines.

1. Nasal spine present. Pectoral normal.

(x) Less than 35 series of scales above L.1. Head almost completely covered with normal scales. Hind part of L.1. irregular..... **Parascorpaenodes nov.** (p. 62)

(y) More than 35 series of scales above L.1. Head normally only partly scaly. L.1. regular to end..... **Scorpaenodes** (p. 63)

2. No nasal spine. Mid pectoral ray abruptly longer than those above..... **Hypomacrus** (p. 67)

B. Lateral line confined to first 4–5 scales. 5 or more spines on suborbital..... **Phenacoscorpius** (p. 69)

In addition to those described here, the following species of uncertain identity have been described from the Western Indian Ocean.

Scorpaena axillaris Bliss, 1833, Mauritius.
Scorpaena diepiplera Bianconi. Recorded by Sauvage, 1895 from Madagascar.
Scorpaena erythraea Cuvier, 1829, Mauritius.
Scorpaena longicornis Gunther 1866, Zanzibar.
Scorpaena mauritiana Cuvier 1829, Mauritius, Madagascar.

Scorpaena megastoma Sauvage, 1875, Madagascar, Reunion.
Scorpaena tristis Klunzinger, 1884, Red Sea.
Scorpaena voelzkowi Jatzow & Lenz, 1898, Zanzibar.

Genus **Scorpaena** Linn, 1758.

Genotype **Scorpaena porcus** Linn, 1758. 12 dorsal spines connected by membrane and 8–10 rays. Teeth on vomer and palatine. Scales ctenoid, prepelvic region and most of head naked. Lateral line runs to caudal base. Hind lower preorbital spine retrorse. Total gillrakers of lower part of outer arch less than 14. Few small or moderate species, of some importance as food, mainly Atlantic, one species rounds the Cape.

Scorpaena scrofa Linn, 1758
(Plate II, E. Fig. 2)

Scorpaena scrofa, Gunther Cat. Fish. B.M. 1860, II, Lowe, Fishes Madeira, 1860, 105, Pl. 16, Gilchrist Ann. S.A. Mus. 1909, VI. 236. Norman Disc.Rep. 1935 XII. 28. Fowler, Bull. Am. Mu. Nat. Hist. 1936, LXX, 922.

Scorpaena natalensis, Regan, Ann. Nat. Gov. Mus. 1906, I, 5, Pl. V. Gilchrist, Ann. S.A. Mus. 1909, VI, 236. Barnard Ann. S.A. Mus. 1927, XXI, 902, Pl. 23, f.c (copied). Smith, Sea Fishes, S.A. 1949, 371, Pl. 83, f.1040.

D XII 9. A III 5. Pectoral with one slender upper and 8–11 thickened lower rays simple, young specimens with 7 inner divided rays, increase to 10 with age, total 19, rarely 18. 42–44 series above L.1, 20–22 tubular. 5–6 series below 4th dorsal spine above L.1. 13 series from anal origin up, 4 below base of last dorsal ray to L.1. 3–5 scales before dorsal origin. On upper limb of outer gill-arch 3–4 knobs and one short raker; one raker in angle, in front 4-5 short stout rakers and 4–6 knobs, total 10–12.

In percentage of standard length; total length 125–129; depth 35–39; head 39–42; eye 6–8; interorbital 6–7; snout 9–12; postorbital 22; spinous dorsal base 40-42; soft dorsal base 14–15; 1st dorsal spine 6–7; 3rd 16–20; 5th 14–16; 11th 8–9; 12th dorsal spine 9–11; 3rd dorsal ray 18–20; 2nd anal spine 13–14; 2nd anal ray 19–20; pectoral (out from body) 24–29; pelvic 22–24; peduncle depth 10–11.

Body stout, moderately compressed, snout fairly blunt. Skinny flaps above eye and on many parts of head, variable in length, even on two sides of same fish. 4–6 small disc-like lappets along upper margin of iris. Occasional flaps on body. Flap to anterior nostril with ciliate margin. Gillrakers short and stout, apically dilated, knob-like, apex spinate, diminish anteriorly, grading into knobs in front. Interorbital deeply concave, coronal ridge well marked but no spine, sub-continuous with postfrontal spines. Nasal spine stout. Pairs of spines present: preocular, supra-ocular, postocular, postfrontal, pterotic, posttemporal, humeral, parietal, nuchal, 2–4 feeble postorbital and 3–5 small sphenotic spines. No tympanic spines, opercular spines subequal. 4–5 spines along preopercle margin, upper largest with small spine on base. Preorbital with 5 spines below, 2 pointing forwards, the median, small, sub-vertical, the hinder 2 slightly backwards, in juveniles 3rd and 4th spines from front poorly developed. Sometimes a small lateral pointed keel on preorbital. Suborbital ridge mostly with 3 distinct spines, sometimes a 4th minute anterior.

A quadrate occipital depression almost twice as wide as long immediately behind frontals. Distance from anterior margin of pit to dorsal origin 1⅓ to more than twice eye, increases with age. Much of head beset with pores and small skinny pustules, most marked predorsally, over interorbital, snout, postorbital and below suborbital stay, become less marked with age.

Maxilla extends to nearly below hind margin of eye, further forward with age. Fine teeth in bands in each jaw, inner series along lower jaw enlarged, and along back of front of upper. Villiform teeth in a narrow angular band on vomer, become fewer and ragged with age, and in club-shaped area on palatine, about equals one limb of vomer. Tongue rounded, largely adnate.

Most scales strongly ctenoid, cycloid on midline of belly and under pectoral where they are smaller, the hinder of latter with crenulate edge, anteriorly with smooth edges. An area behind pectoral base, between pectoral and pelvic, the pectoral base and whole of chest, naked. Feeble scales on belly almost to pelvic base. Predorsal scales few, end opposite tip of nuchal spine. No scales visible on head, but below pterotic and posttemporal spines, completely concealed below skin, are 2 axial series of 4 thin cycloid scales, and behind the eye 2 vertical series of 4 similar but smaller scales. No scales on fins. A marked more or less bifid skinny flap on last tubular scale out over base of caudal.

Dorsal inserted over about mid opercle. Spines increase, in the young to 3–5th, longest, with age the 3rd becomes notably longest. Membrane moderately incised, becomes more so between first 4 spines with age. Fin moderately notched before 12th spine. Soft fin rounded, last ray joined by membrane for 2/3 length to body. Caudal gently rounded. Anal elongate, small basal membrane behind last ray. Pelvics reach near or beyond vent. Pectorals broadbased, reach to vent or to or near anal origin, rounded in juveniles, with age upper divided rays increase in relative length.

Colour; live: somewhat variable, mainly red, lighter below, with dark marks and mottlings on head and along back. Spinous dorsal pink, mottled dusky, usually a variable blackish area between the 6–10th spines, soft dorsal and caudal yellowish to red with dark spots. Anal reddish basally, nebulously dark apically, pelvic similar. Pectoral red crossed by series of dark spots or small ringed ocelli. Iris scarlet. Preserved: Yellowish, with irregular dark marks on head and body. Fins with dark spots and marblings. A variable black area between apices of 6–10th dorsal spines. Pectoral, apex of pelvic and anal, sometimes darker. Dark marks on chin.

Described from 7 specimens, 150-300 mm. total length, from Algoa Bay to Durban in 30–50 fathoms. Previously accepted as **natalensis** Regan, 1906, without any account of differences from **scrofa** Linn. I have compared the above with **scrofa** from Madeira and the Mediterranean, (kindly sent by Drs. G. Maul, N. B. Marshall, and E. Tortonese) and can find no characters by which **natalensis** Regan 1906 can be maintained as distinct. Not only is this clearly a variable species, but growth changes occur. I suspect the characters used by Norman (loc. cit. 1935) in differentiation of eastern Atlantic species to be unreliable, and **Scorpaena Angolensis,** Norman (loc. cit. 1935, p. 28, fig. 10) is likely a juvenile **scrota,** there are discrepancies between the figure and the rather inadequate description. **S. scrofa** has a wide distribution, Mediterranean, eastern Atlantic, Ascension and South Africa, reaching to Delagoa Bay.

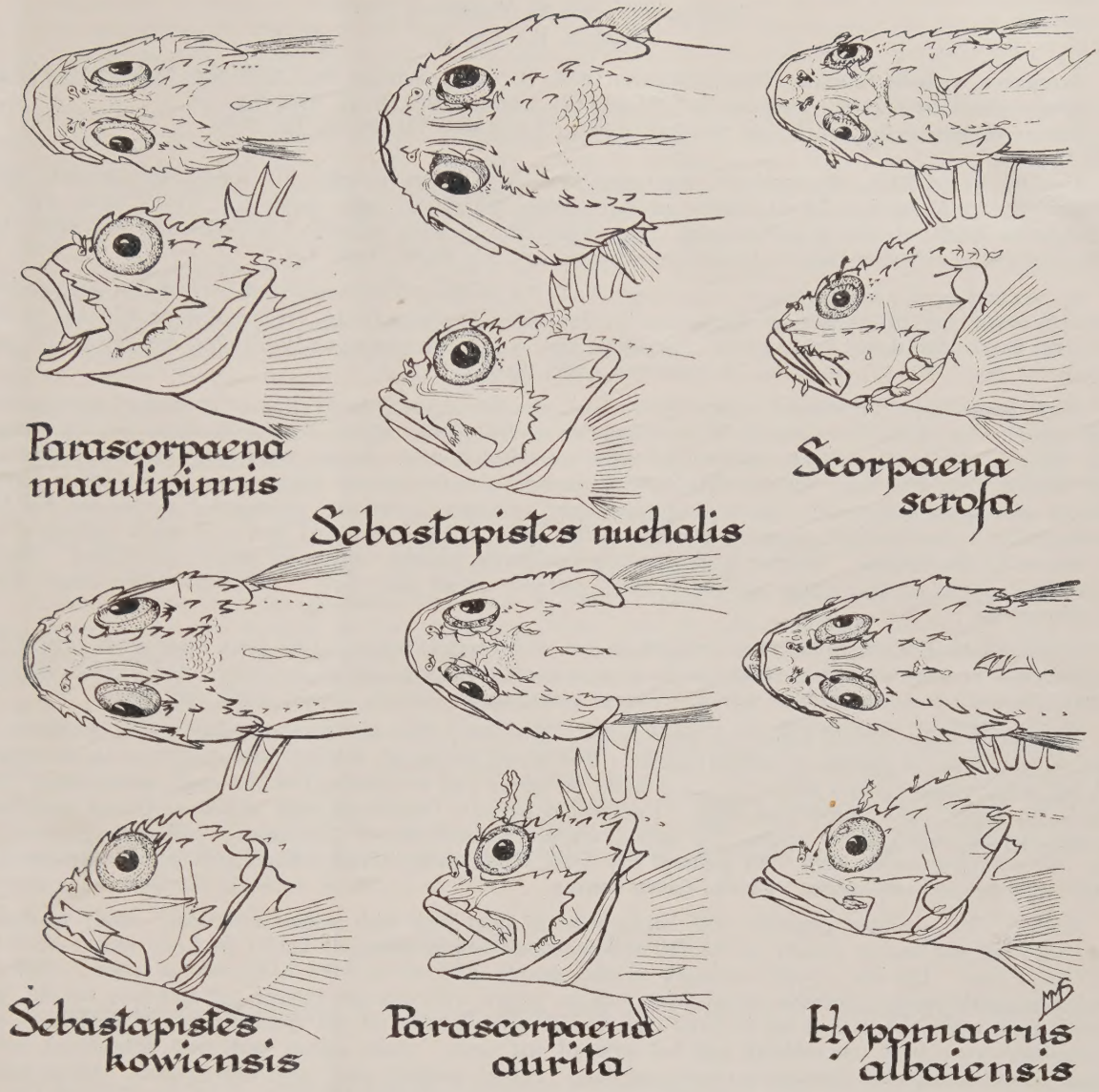

Fig. 2.
To show spination of heads of Scorpaenid fishes.
For nomenclature see Fig. 1.

Genus **Sebastapistes** Streets, 1878.

Genotype **Scorpaena strongia** Cuvier, 1829. Although the original description of the species is quite inadequate for specific distinction, by the characters of this group it may be accepted as definitive of the genus, briefly as follows: Body completely covered with moderate mainly ctenoid scales; lateral line to caudal base; some scales on head. Hind preorbital spine retrorse. 12 dorsal spines, all connected by membranes, 8–10 rays. Teeth on vomer and palatine. Fewer than 12 short stout gillrakers on lower limb of outer gill arch. Small fishes, mainly in shallow water, circumtropical, species moderate in number, 3 in the Western Indian Ocean.

A. Strong coronal ridges and postfrontal spines present..... **nuchalis**

B. Coronal ridges feeble, usually no postfrontal spines.

I. Suborbital ridge normally double with only one terminal spine. No tentacles. 8th pectoral ray not elongated, not to anal origin..... **kowiensis**

II. Suborbital ridge normally single with 2–3 spines. Tentacles normally on head. 8th pectoral ray slightly elongated, reaches anal orgin or beyond. ..... **oglinus**

Sebastapistes nuchalis (Gunther), 1874
(Plate II, B. Fig. 2)

Scorpaena nuchalis, Gunther, Fisch. Sundsee, 1874, II, 76, fig. Schultz, Bull. U.S. Nat. Mus. 1943, 172-4.
Sebastapistes corallicola. Jenkins, Bull. U.C. Fish. Comm. 1902 XXII, 493, Fig.. 38.
Scorpaena kowiensis (non. Smith) Smith, Sea Fish. S.A. 1949, 371, Pl. 83, fig. 1039.

D XII 8–9. A III 5. Pectoral with one upper and 10–11 lower simple, 4–5 inner rays divided, total 16. About 40–42 series above L.1, 23–24 tubular scales, 6 below 4th dorsal spine above L.1, 11–12 series from origin up. 2–4 scales predorsal, end at nuchal spine. On upper limb of outer gillarch 3–4 knobs and one raker, longest raker in angle, then on lower limb 3–4 short stout rakers and 3–5 knobs, total 7–8.

In percentage of standard length: total length 120–124; depth 30–33; head 38–40; eye 8–10; interorbital 7–8; snout 9–10; postorbital 18–22; spinous dorsal base 35–38; soft dorsal base 15–16; 1st dorsal spine 4–7; 4th 14–20; 5th 16–20; 11th 8–10; 12th dorsal spine 14–16; 3rd dorsal ray 17–20; 2nd anal spine 19–21; 2nd anal ray 19–20; pectoral (out from the body) 30--35; pelvic 22-24; penducle depth 9--10.

Body moderately compressed, snout fairly blunt, usually a small skinny flap at preocular, supraocular and pterotic spines, and each side of snout. Flap to anterior nostril feebly ciliate, feeble filaments usually along preopercle margin. A small quadrate naked depression on occiput, more obvious with age. Gillrakers short, stout, apically dilated, knob-like, apex spinate. Interorbital narrow, concave coronal ridge strong but no spine, sometimes continuous with postfrontal spines. Pairs of spines present are: nasal, preocular, supraocular, postocular, postfrontal, tympanic, pterotic, posttemporal, humeral, parietal, nuchal, 3–4 feeble postorbital and 3–4 small sphenotic spines. Upper opercular spine larger. Usually 6 spines along preopercle margin, uppermost small, 2nd largest. Preorbital wtih usually 2 strong antrorse spines anteriorly, and 2 retrorse spines posteriorly. Suborbital ridge single with terminal spine only.

Maxilla extends to or beyond hind margin of eye. Fine teeth in bands in both jaws, inner series enlarged along lower jaw, and in front of upper. Villiform in a narrow chevron-shaped band on vomer, and in club-shaped area on palatine, about equals one limb of vomer. Tongue subtriangular, largely adnate, small apex free.

Main body scales ctenoid posteriorly more feebly. On belly, chest and pectoral base cycloid, prepelvic scales smaller, a narrow apical portion at isthmus naked. 2–4 series predorsal, end at nuchal spine. Head apparently naked, but with hidden cycloid scales, 4–6 in 2 series on upper part of opercle, 3–4 in a single series behind eye and usually 2 on cheek below suborbital ridge. Interorbital naked. Dorsal and anal naked. Dorsal inserted over about mid opercle, 4–6th spines longest, fin variably deeply notched before 12th spine. 2nd anal spine much the longest and strongest on the fish. 7th pectoral ray from above always simple and longest, pectoral and anal reach near to, rarely beyond anal origin. Caudal feebly convex.

Colour: alive: variable, generally with background of light pink with yellow suffusions. Body marbled and clouded with red and brown, usually no marked crossbars, but caudal peduncle lighter in front with a dark brown bar at caudal base. The iris, a pupil size mark on mid opercle, and an inverted halfmoon on apex 7--10th dorsal spines bright scarlet pink. Spinous dorsal faint pink to yellow with obscure oblique red and blue streaks, soft fin pink with pupil width subvertical bar in front and several oblique series of red spots behind. Caudal pink with 2 dark crossbars, one at base, one midway, and 3–4 series of red spots. Anal yellow with 4--5 subvertical red bars, pectorals yellowish with 4–6 convex, narrow cross bars. Pelvics reddish, often with brown spots. Head yellowish, marbled, lower jaw and lip red. Preserved: Brownish, marbled, an irregular dark cross bar below front of soft dorsal and sometimes indications of one above pectoral. Base of caudal dark, a broad bar and spots behind. Fins light, barred and spotted. A circular dark mark on lower opercle and a dark mark on 7–10th dorsal spines, occassionally absent. Young fishes often have 3 dark cross bars and rarely show the black mark at 7–11th dorsal spines, some show a vague dark area on front of spinous dorsal.

Described from numerous specimens 33–105 mm. length, from Algoa Bay (34°S.) northwards, abundant throughout East Africa and at all islands beyond to Seychelles. Previously recorded only from a limited area of the central tropical Pacific, mainly Hawaii, probably due to confusion and malidentification. Gunther's original description based on a juvenile is scanty. The first clear definition is that of **corallicola** Jenkins, which is more worthy of acceptance. Examination of earlier inadequately described types will doubtless result in finding this species among them, **asperella** Bennett, 1828 and **strongia** Cuv, 1829 indicated as likely. In the course of our work in East Africa we came to identify this species, quite arbitrarily, with **Scorpaena kowiensis** Smith.

Sebastapistes kowiensis (Smith), 1936
(Plate II, D. Fig 2)

Scorpaena kowiensis, Smith. Rec. Alb. Mus. 1936. 224. Smith, Sea Fishes S.A. 1949, 1039 (part).

D XII 9. A III 5–6. Pectoral with 1–2 upper and 9–10 lower simple, 4–5 inner rays divided, total 15–16. About 42–45 series above L.1, 24–26 tubular scales. 8–9 series below 4th dorsal spine to L.1, 14–15 series from anal origin up. About 6 scales predorsal to tip of nuchal spine. On upper limb of outer gill arch 4–5 knobs and one raker, longest raker in angle, then on lower limb 4–5rakers and 6–7 knobs, total 11.

In percentage of standard length; total length 123–125; depth 35–38; head 40; eye 11–12; interorbital 2–3; snout 11–12; postorbital 22; spinous dorsal base 40; soft dorsal base 16; 1st dorsal spine 6–8; 4th 18–20; 5th 18–20; 11th 5.5; 12th dorsal spine 10; 3rd dorsal ray 17; 2nd anal spine 18–22; 2nd anal ray 20; pectoral (out from body), 26–28; pelvic; peduncle depth 10.

Body moderately compressed, becomes more elevated with age, snout fairly blunt. No filaments or tentacles on head or body except flap to front nostril. Gillrakers apically dilated, knob-like, apex spinate. Interorbital narrow, sharply concave, coronal ridge feeble, no spine. Pairs of spines present: nasal, preocular, supraocular, 1–2 postocular, tympanic, pterotic, humeral, parietal, nuchal, 2 posttemporal and 2–3 sphenotic spines. Postorbital and postfrontal spines normally absent, in one specimen a pair of outwardly flaring postfrontal spines, upper opercular spine much the larger. 5–6 spines along preopercle margin, upper smallest, close to 2nd which is largest. Preorbital with 2 strong antrorse spines and 2–3 retrorse, the median weakest, the whole erectile laterally. Suborbital ridge double, normally with only small terminal spine.

Maxilla extends variously below hind margin pupil to hind margin of eye. Fine teeth in bands in each jaw, inner series enlarged. Similar teeth in chevron-shaped band on vomer, and as band on palatine, area about equals one limb of vomer. Tongue rounded, adnate, small apex free.

Body scales ctenoid, cycloid on belly and chest, the latter small and embedded. Predorsal scaling to base of nuhcal spines. Ctenoid scales on opercles, embedded cycloid scales on cheek and preopercle, interorbital and head otherwise naked. Dorsal and anal naked. Dorsal inserted over or behind preopercle margin, the 4–5th spine longest, fin deeply notched before 12th spine. Pectorals and pelvics do not reach anal origin. Caudal feebly convex.

Live colour: Body mainly bright coral red, partly densely covered with minute silvery spots, also 10–14 irregular bright yellow blotches, largest pupil size. Spinous dorsal red at base and on tips of spines, body of fin mottled red and yellow, first two spines entirely red. Soft dorsal and all other fins bright yellow. Iris red and silver.

Described from numerous specimens 25–80 mm. in length, taken from below low tide mark to 5 fathoms, always in coral, found over most of the Western Indian Ocean, only the type from Port Alfred (33° 35'S x 27° E), otherwise from Bazaruto (21°S), northwards along the East African coast, at Zanzibar, Pemba, Mafia, Aldabra, and all islands to Seychelles. Rarely exceeds 70 mm., the 80 mm. specimen illustrated from Bazaruto. This beautiful fish was taken in hundreds mostly by explosives from coral in deeper water. As it is not rare and has now been found over so wide an area it likely occurs in the Indo-Pacific generally. Related to **Sebastapistes coniorta** Jenkins, 1902, from Honolulu, its colour and markings are strikingly different, **coniorta** described as a dark fish, the present species notably brilliant, and there are slight variations in the cephalic spination. The type, 59 mm. in length, taken at Port Alfred many years ago, not in good condition, was clearly a stray, for despite intensive collection, no further specimens have been found south of Bazaruto, almost 1,000 miles to the north. The original description contains some errors, notably "D VII 9"). The fish illustrated as **"kowiensis"** (Smith, Sea Fishes S.A. 1949 Pl. 83, fig. 1039) is not this species, but **nuchalis** Gunther (q.v.).

Sebastapistes oglinus (S mith),1947.

(Plate III, B and C. Fig. 3).

Kantapus oglinus, Smith, Ann. & Mag. Nat. Hist. 1946, (11), XIII, p. 817. Smith, Sea Fishes S.A. 1949, 369, fig. 1035.

D XII 8–9. A III 5. Pectoral variable, sometimes all rays simple, or from the 2nd above 1–6 apically bifid, the two pectorals on one fish may be widely different, total 14–17, lower rays not thickened apically. About 44 series above L.1, 20 tubular scales. 6–7 series below 4th dorsal spine above L.1. 11–12 series from anal origin up. 2–6 scales predorsal, end at tip of nuchal spine. On upper limb of outer gill arch 3–5 knobs, the longest raker in angle, then on lower limb 4 short stout rakers and 4 knobs, total 9.

In percentage of standard length: total length 125; depth 34–40; head 38–40; eye 8–9; interorbial 5–6; snout 11–13; postorbital 18–20; spinous dorsal base 38–40; soft dorsal base 15–19; 1st dorsal spine 4–6; 4th 16–20; 5th 17–20; 11th 9–11; 12th dorsal spine 14–15; 3rd dorsal ray 20; 2nd anal spine 18–20; 2nd anal ray 23–25; pectoral (out of body) 30–35; pelvic 24–26; peduncle depth 10–11.

Body moderately compressed, snout fairly blunt. Usually a cirrus above eye, variably short to 2.2 times eye, sometimes a filament at front of eye and of snout. Flap to anterior nostril apically dilated and usually multifid, filaments along preopercle edge. Gillrakers short and stout, apically dilated, knob-like, apex spinate. Interorbital narrow, concave, coronal ridge feeble but distinct, no spine. Pairs of spines present: nasal, preocular, supraocular, postocular, tympanic, 2 pterotic, humeral, parietal, nuchal 2 posttemporal and 2–4 feeble sphenotic spines. Parietal spine typically low, ridge-like, much longer than nuchal spine. Postorbital spines absent or feeble. Postfrontal spines absent. Opercular spines subequal. 5 spines along preopercle margin, upper largest, with small spine on base. Preorbital with 2 lower spines, hinder curves back. Suborbital ridge usually with 3 small spines, the anterior below hind margin of eye, 1–2 near preopercle margin.

Maxilla extends to below about hind margin of pupil or of eye. Fine short teeth in bands in each jaw, inner series in lower jaw slightly enlarged. Short villiform teeth in chevron-shaped band on vomer, a band on palatine, longer than one limb of vomer. Tongue sub triangular, largely adnate, small apex free. Scales feebly

cienoid, cycloid on belly and chest, which are fully scaled. Head mainly naked, a patch of almost concealed scales on upper part of opercle, 5 long and 2 deep in front. Behind the eye, completely concealed by skin a vertical row of 3 plain cycloid scales. On the cheek, also concealed, are 3–4 large and sometimes one small smooth scales. Dorsal and anal naked.

Dorsal inserted over hind third of opercle or more advanced, 4–7th spine longest, fin little notched before 12th spine. Pectorals and pelvics reach to or beyond anal origin. The pectoral is fairly elongate, rays increase from uppermost to the 8th below, which is always longest, generally abruptly longer than adjacent rays. Total length of pectoral measured out from body always markedly more than depth of head through eye and longer than head without snout. Caudal feebly convex. Lateral line tubes adjacent anteriorly, become separated on peduncle.

Colour, alive: Sombre, usually dusky or brownish red, mottled and marbled in darker, odd red brown spots. Variably dark spots or blotches on fins, anal and pelvics mostly dark with few lighter bars and marks, pectorals darker basally. Characteristic mottled dark bars across whole of chin. As preserved: Brownish, vague darker mottlings on body, darkest below dorsal origin. Dark mottled bars across chin and throat. Spinous dorsal dusky, often narrow darker submarginal band, outer portion of membranes light, a few dark spots along base of fin. Soft dorsal mottled dusky. Caudal dusky, often broad darker bar across middle. Anal dusky, mottled darker. Pectoral dusky, a dark blotch over middle of base. Pelvics dusky, blotched darker.

Described from numerous specimens 25–95 mm. in length, from a wide area of the Western Indian Ocean, from Durban northwards to Kenya and at all islands to Aldabra and Seychelles.

Originally described from the type from Inhaca island with pectoral rays all simple, the present series shows this to be a most variable fish. Individual specimens could lead different workers, and doubtless already have, to regard each as the type of a different species. The pectoral rays vary from 14–17 with maximum at 15–16, variably with all simple or 1–6 of the upper divided, the 2 fins on one fish often differ. It has not been possible to define any sub-groups on this feature, nor is it a matter of size. The size and presence of tentacles on the head, especially those above eye, are also variable, the supraorbital tentacle either lacking, or small or very elongate, often reaching to base of 3–4th dorsal spine.

While the species is easily identified by general facies, both alive and preserved, the genus **Kantapus** Smith, 1947, based mainly on pectoral rays all simple, can now scarcely be maintained, since it would rest on little more than the slight prolongation of the 8th pectoral ray and of the parietal spine.

As this species is relatively abundant and widespread in the Western Indian Ocean, it must have been described before, but while there are several species which may be identical, the data are not sufficient for certainty. Among these may especially be listed **Scorpaena haplodactylus** Bleeker, 1857 **(bandanensis** Bleeker) from the Pacific, and **voelzkowi** Jatzow & Lenz, 1898, from the Red Sea, (but not the **haplodactylus** of Day 1876 which is without doubt **Parascorpaena aurita Rupell,** 1838).

Fig. 3.
Showing spination of head of **Sebastapistes oglinus** (Smith), specimen with long and one with short tentacle.

Genus **Parascorpaena** Bleeker, 1876

Genotype **Scorpaena picta** Cuvier, 1829, chiefly as designated by Bleeker. Body completely covered with moderate mostly cycloid scales, some crenulate, some on opercular region of head. Lateral line extends to caudal base. Hinder lower preorbital spine hooked forward. 12 dorsal spines connected by membrane, 8–8 rays. Teeth non vomer and palantines. Total gillrakers on lower part of outer arch less than 14. Rather small fishes, tropical Indo-Pacific, possibly 3 species in the Western Indian Ocean.

A. Pronounced circular dark mark on hinder part of spinous dorsal. Ocular cirrus with entire edge ..... **maculipinnis**

B. Dorsal without circular black blotch. Ocular cirrus absent or ciliate.
   I. Predorsal scales end at nuchal spine. Scales on head concealed, 2 below suborbital ridge. Orbital tentacles normally well developed..... **aurita**
   II. Predorsal scales to eye. Visible scales over most of postorbital area (?). No orbital tentacle ..... **picta**

Parascorpaena maculipinnis n.sp.

(Plate II, A. Fig. 2)

D XII 8–9. A III 5. Pectoral with 1–2 upper and 11 lower simple, 3–4 inner rays divided, total 16. About 36 series above L.l, 23–24 tubular scales. 6–7 series below 4th dorsal spine above L.l, 12–13 series from anal origin up. 1–2 scales predorsal, end at nuchal spine. On upper limb of outer gill arch 2–3 knobs and one raker, longest raker in angle, then on lower limb 4 short stout rakers and 2 knobs, total 7.

In percentage of standard length; total length 125; depth 30–33; head 40–42; eye 9–12; interorbital 5–6; snout 9–10; postorbital 18–20; spinous dorsal base 38–40; soft dorsal base 13, 1st dorsal spine 5–6; 4th 18–19; 5th 18–19; 11th 9–11; 12th dorsal spine 15–16; 3rd dorsal ray 18; 2nd anal spine 20–23; 2nd anal ray 23–24; pectoral (out from body) 28–30; pelvic 23–24; peduncle depth 10–11.

Body moderately compressed, snout fairly blunt. Above eye a skinny flap, apically dilated, not ciliate. Plain flap to anterior nostril. Filaments sometimes along preopercle margin. Gillrakers short, stout, apex dilated, knob-like, spinate. Interorbital narrow, sharply concave, coronal ridge feeble, no spine. Pairs of spines present; nasal, preocular, supraocular, postocular, tympanic, pterotic, humeral, parietal, nuchal, 2 posttemporal, 1–2 weak sphenotic spines. Postorbital and postfrontal spines absent, upper opercular spine larger. 5 spines on preorpercle margin, upper largest, with small spine on base. Preorbital with 3 strong antrorse spines, hindmost hooked forwards. Suborbital ridge with 3 small spines.

Maxilla extends to or almost below hind margin of eye. Fine teeth in bands in both jaws, inner series enlarged in lower jaw. Villiform teeth in chevron-shaped band on vomer, and in band on palatine, area equals one limb of vomer. Tongue subtriangular, largely adnate, small apex free.

Scales apparently all cycloid, belly and chest fully scaled. Predorsal scaling extends to level of base of nuchal spines. 2 series of small almost concealed cycloid scales on upper part of opercle, 4 similar scales in a vertical row just behind eye, completely concealed below skin as are also 2 similar isolated scales on cheek below eye, head otherwise naked. No scales on dorsal or anal. Dorsal inserted over or behind preopercle margin, 4–6th spines longest, fin deeply notched before 12th spine. Pectorals and pelvics reach to or near anal origin. Caudal convex.

Record of live colours lost, together with others, in a note book blown overboard in a storm. As preserved: light brown with darker markings forming irregular cross-bars, hinder 2, one below soft dorsal origin, the other over peduncle and base of caudal, more distinct. Spinous dorsal mottled dusky, a black ocellus half eye area between 8–11th spines. Soft dorsal, caudal, and anal with dusky mottlings in lines. Pectoral light with irregular bars across base and near apex. Pelvic light with dusky mark on middle.

Described from 7 specimens, one 36 mm. from Inhaca, two, 53 and 56 mm. from Bazaruto, three, 36, 38 and 58 mm. from Baixo Pinda, and one, 33 mm. from Ibo, the type 56 mm. in length from Bazaruto.

In its antrorsely curved hind preorbital spine, cycloid scales, and in general features, this small fish is closely related to **aurita** Ruppel. It is, however immediately characterised by the prominent black blotch on the spinous dorsal, and the ocular cirrus always has an entire edge. All my specimens have 16 pectoral rays. While odd variants in **aurita** range from P 14–17, most have P 15.

Parascorpaena aurita (Ruppell), 1838

(Plate II, C. Fig. 2)

Scorpaena aurita Ruppell, N.W. Fishes, 1838, 106, Pl. 37, f.2.
Scorpaena haplodactylus (**non** Bleeker) Day, Fish India, 1878, 149, Pl. 36, f.2.
Scorpaena mossambica Peters, Wiegm. Archiv. 1855, 241. Barnard, Ann. S.A. Mus. 1927, XXI, 903. Smith, Sea Fishes S.A. 1949, 370, Pl. 83, f.1037.
Scorpaena zanzibarensis, Playfair, Fishes Zanz, 1866, 47, Pl. VII, f.2. Matsubara, Trans. Sigen Kenk, 1943. No. 2, 308, fs. 106–108 (Japan).
?Scorpaena durbanensis (non G. & T.), Fowler, Proc. Ac. Nat. Sci. Phil., 1952, LXXVII, 253.

D XII 8–9. A III 5–6. Pectoral with 0–2 upper and 9–12 lower simple, 2–5 inner rays divided, total 15–17, usual 15. About 39–42 series above L.1, 23–24 tubular scales. 6–7 series below 5th dorsal spine above L.1, 12–13 series from anal origin up. 3–5 scales predorsal, reach parietal spine. On upper limb of outer gill arch 2–4 knobs and one raker, longest raker in angle, then on lower limb 4 short rakers and 3–6 knobs, total 8–11.

In percentage of standard length: total length 124–130; depth 35–40; head 39–42; eye 8–11; interorbital 6–8; snout 11–14; postorbital 20–23; spinous dorsal base 41–44; soft dorsal base 15–17; 1st dorsal spine 5–7; 4th 20; 5th 15–19; 11th 8–12; 12th dorsal spine 12–16; 3rd dorsal ray 19–21; 2nd anal spine 19–25; 2nd anal ray 20–22; pectoral (out from body) 29–32; pelvic 25–26; peduncle depth 10–11.

Body moderately compressed, relative depth increases with age, snout fairly blunt. A distinct occipital depression, naked. A thick fleshy flap above eye, variably short to longer than eye, the margin normally with parallel small ridges on front, rarely absent, longest tentacle seen 2.2 in head, reaching base of 3rd dorsal spine. Skinny flaps and ridges on upper part of iris often present. Flap at anterior nostril with crenulate edge, a filament usually at preocular spine, a row along preopercle margin, a large fimbriate flap at hind preorbital spine. Other odd filaments on head, usually one on maxilla, none on chin, rarely a few along L.1, and front of body. Gillkrakers, short, stout, apex dilated, knob-like, spinate. Interorbital narrow, sharply concave, coronal ridge feeble, no spine. Pairs of spines present; nasal, preocular, supraocular, postocular, tympanic, pterotic, humeral, parietal, nuchal, 2 posttemporal and 1–2 weak sphenotic spines. A single postorbital spine may be present, no postfrontal spines. Opercular spines subequal, usually 5 on preopercle margin, upper largest, with small spine on base, the lower 2 often obtuse. Preorbital with 2 lower strong antrorse spines, hinder always hooked forwards. Suborbital ridge usually double below eye, lower rarely ending in a spine, its hind end usually concealed, almost always 2 spines behind eye, close together.

Maxilla extends variably to between pupil and hind margin of eye. Bluntly pointed teeth in bands in each jaw, inner series enlarged in lower jaw at symphysis where band broadens suddenly. Similar obtuse teeth in a band on vomer, apex of vomer dilated, a band on palatine, equals one limb of vomer. Tongue subtriangular, largely adnate, small apex free.

Scales apparently all cycloid, those on shoulder often crenulate, smaller on belly and chest, which are fully scaled. Predorsal scaling ends behind occipital depression. 2 series of 4 scales, almost entirely concealed by skin, below pterotic and posttemporal spines, the hindmost with apical ctenae, the others cycloid. 2 verticle concealed series of cycloid scales behind eye, 3–5 with age similar concealed scales between upper preopercular spine and base of lower opercular spine. On cheek below suborbital stay usually 2, rarely 1 or 3, moderate smooth cycloid scales, completely hidden by skin, interorbital and head otherwise naked. Occasionally a few small basal scales on dorsal and anal, but those mostly naked. Dorsal inserted variably over opercle to preopercle margin, 4–6th spine longest, fin moderately notched before 12th spine. Relative length of last 2 spines variable, but last always 1.3—1.6 times as long as 11th. Pectorals and pelvics reach to or near vent. In small juveniles all pectoral rays simple. Caudal gently rounded.

Colour alive: variable but characteristic. Smaller fishes usually lighter, basally pinkish, head red and yellow, with red marbling and bars on chin and lip, ocular tentacle reddish yellow, body lightly marbled and spotted red and brown. Spinous dorsal yellowish, spotted and streaked obliquely with red and black, soft dorsal yellow with two subvertical red brown bars. Caudal yellow with red brown base and margin, a broad red bar across the middle Anal yellow with 3 red brown bars. Pectorals yellow above with faint red cross bars, reddish below. Pelvics reddish with central bar. Iris scarlet. Colour darkens with age, larger fishes mostly dark red brown mottled pinkish. Vertical fins pink or red, variable, with reddish mottlings and bars. Pelvics claret, red area above axil. Iris dusky red, often brown bars. Head tentacles scarlet to red brown. As preserved: rather dark, barely lighter ventrally, lighter parts with dark brown mottling, cloudy over head and nape, an irregular wide dark area below most of spinous dorsal, sometimes to belly, an ill-defined eye-width dark cross bar below middle of soft dorsal, runs on to front of that fin and over middle of anal, a narrower dark bar across peduncle. Dorsal dusky, spinous part with irregular dark blotches, soft dorsal with an oblique bar basally in front, a dark blotch halfway out along front rays and a broad dark subvertical bar on hind part. Caudal with dark cross marks, narrow near base, form a wide bar across middle of fin. Anal with 3 irregular subvertical dark bars. Pectorals and pelvics with transverse rows of dark spots and blotches. Lips and chin usually mottled and barred.

Described from several hundred specimens, 20–140 mm. in length, ranging from Knysna (34°S. x 23°E.) over East Africa and all islands of Western Indian Ocean to Seychelles, abundant and widespread, living mainly in weed, also in sand and coral, none exceed 140 mm. length. Exhibits considerable variation, notably in ciliation of head, the orbital cirrus varying widely in size, sometimes absent, rarely on one side only, or minute on one side, large on other. Pectoral rays vary from 15–17, with maximum at 15. Most specimens without orbital tentacles have P 17, but some with tentacles have that count. Always recognisable by the forwardly hooked hind preorbital spine, by the characteristic orbital tentacle and by basic markings. I have little hesitation in placing this fish as **aurita** Ruppell, the illustration of which is alone fully diagnostic. It is doubtful whether this fish should not be united with **picta** Cuvier, 1829, from the East Indies, which, as described and figured by Bleeker (Nat. Verh. Kon. Akad, 1876, XVI, 25, Pl. 2, f. 4) is very close to my specimens, except that **picta** is expressly stated to attain 170 mm., to have no orbital tentacle, P 17–18, and shown with virtually the whole postorbital area and predorsal to eye scaley, (possibly and artist's error). I have several specimens without orbital tentacles, which otherwise so exactly resemble my remaining specimens **(aurita)** that I cannot possibly separate them, but had they come from the East Indies, could easily be accepted as **picta** Cuvier, except for the reduced scaling behind eye. It is anticipated that **aurita** will prove to be much more widespread than at present realised. It has been found in Japan.

Parascorpaena picta (Cuvier), 1829
(Plate IV, F)

Scorpaena picta Cuvier, Hist. Nat. Poiss, 1829, IV, 236. Gunther, Cat. Fish. B.M. 1860, II, 114.
Parascorpaena picta, Bleeker, Verh. Ak. Amst. 1876, XVI, 25, Pl. 2, f.4, Herre, Phil. Journ. Sci. 1952 Vol. 80, 403.

Compiled, no specimen to hand: D XII 10. A III 5. Pectoral with one upper and 11–12 lower rays simple, 4–5 inner divided, total 17–18. About 45 scales above L. l, 6 predorsal.

In percentage of standard length, depth 32–34, head43–45, , eye 10–11, interorbital 7–8, snout 9–10, 4th dorsal spine 16, 2nd anal spine 18–19, pectoral 28–30. Suborbital with 2 spines 5 spines on preopercle margin. Hind preorbital spine hooked forward. No orbital tentacle, but filaments on side of head and body.

Maxilla reaches below hind margin of eye. Villiform teeth in band in jaws, in angular band on vomer and as band on palatines. Dorsal inserted over middle of opercle, 4–5th spines longest, deep notch before soft fin. Pectoral not to anal origin. Caudal rounded.

Cycloid or feebly crenulate scales cover body. Head naked except most of postorbital. Colour in life shown as brownish green with lighter yellow and green mottlings and irregular darker bars on body and rosy fins. Stated to reach 170 mm. or more. Recorded from a wide area of the East Indies and from the Philippines. Its inclusion here rests on records from Madagascar (Bleeker & Pollen, 1874, p. 87. Sauvage, Fish, Mad. 1891, 291 & 516), of doubtful validity. I have found no specimens in the Western Indian Ocean which can be positively identified as **picta** as distinct from **aurita** Ruppell (q.v.)

Genus **Pogonoscorpius** Regan, 1908

Genotype **P. seychellensis** Regan, 1908. Diagnosed as compiled here: 12 dorsal spines connected by membrane, 10 soft rays, small scales, lateral line runs to or near caudal base. Head almost as long as rest of body, a barbel on chin. Pectoral rays all simple. Known anly from the holotype, Seychelles

Pogonoscorpius seychellensis Regan, 1908
(Plate IV, D.)

Regan, Trans. Linn. Soc. Lond. 1907-9, XII, I, 236, Pl. 28, fig. 3. Compiled; no specimen. D XII 10. A III 5. P. 18, rays all simple. About 60 series of scales, about 10 between L.1. and base of 4th dorsal spine. Head apparently naked. Head and body strongly compressed. Depth about 40, length of head almost 50 percent. of standard length. Eye more than interorbital. Spines on head not prominent, figure shows nasal, preocular, supraocular, 2 opercular, 3 on preopercle, none on preorbital or suborbital. Mouth large, maxilla extends below middle of eye. No information about dentition or gillrakers. Dorsal originates over preopercle margin, 4th spine longest, little notched before soft fin. Pectoral reaches beyond anal origin. Caudal rounded. As preserved, yellowish, fins tinged red. Known only from the holotype, 65 mm. length, taken in 37 fathoms at Seychelles. The original description (loc. cit. above) is, as not uncommon for Regan, very, scanty, and text and figure are not in full accord.

Genus **Scorpaenopsis** Heckel, 1837.

Genotype **Scorpaena nesogallica** Cuvier, 1829, equals **gibbosa** Bloch, 1801. 12 dorsal spines connected by membrane and usually 9–10 rays. Anal origin in advance of soft dorsal. Scales ctenoid and cycloid, moderate, imbricate. Lateral line complete. Teeth on sides of vomer, none on palatines. Adult with broad interorbital, a deep pit between suborbital stay and front of eye, and with most spines on head multifid. Basisphenoid with large ventral process. A marked humped back. A single rather small species of evil appearance, its spines inflicting agonising but not fatal stabs. Widespread in the tropical and temperate Indo-Pacific, with numerous synonyms.

Scorpaenopsis gibbosa (Bloch), 1801
(Plate IV, E).

Scorpaena gibbosa, Bloch, Syst. Ich. 1801, 192, Pl. 44. Jordan and Evermann, U.S. Fish. Comm. 1905, Bull. 23, 468, Pl. 46, fig. 206.
Scorpaena nesogallica, Cuvier, Hist. Nat. Poiss. 1829, IV, 231.
Scorpaenopsis kagoshimana, Jordan & Starks, Proc. U.S. Nat. Mus. 1904, XXVII, 137.
Scorpaena diabolus, Kner, Novara Fische, 1865, 117, Pl. 6. fig. 1.
Scorpaenopsis diabolus, Bleeker, At. Ich. 1878, 9, Pl. 411, fig. 5.
Scorpaenopsis catocala, Jordan & Evermann, U.S. Fish. Comm. 1905, Bull. 23, Pl. 56.
Scorpaenopsis gibbosa Matsubara, Trans. Sigen. Kenk. 1943, II, 322, figs. 113-115. Smith, Sea Fish. S.A. 1949, 371, Pl. 85, f. 1042. Herre, Phil. Journ. Sci. 1952, Vol. 80, 417.
Scorpaenopsis rosea (non Day) Smith, Sea Fishes S.A., 1949, 371, Pl. 85, fig. 1042.

Highly variable in ciliation of head and body and to some extent in form.

D. XII 9. A III 5. Pectoral with one upper and 11–13 lower rays simple, the inner 4–5 divided, total 17–19. 43–48 scales above L.1. Tr. 7–9/16–18. On upper limb of gill arch 4–5 spiny knobs, one stout spiny raker in angle and 8 spiny knobs in front, front third of arch bare. 2–3 rakers before angle sometimes bifid.

In percent of standard length: depth 35–40; head 44–46; eye 7–9; interorbital 9–12; 3rd dorsal spine 12–14; 4th 13–14; 11th 9–10; 12th spine 11–13; 4th dorsal ray 16–18; 2nd anal spine 17–18; pectoral 29–32; pelvic 24–27.

Body little compressed, stout and normal in small fishes, below front of dorsal rapidly develops a hump that increases with age. Head and body variably with few to many cilia, at the extreme whole head with filaments, the longest at supraocular spine, also over body. In some fishes hardly any filaments, this character not related with age. Outer ring of iris with fleshy processes some trifoliate. Interorbital moderate in young, broadens rapidly with age, exceeding eye. No coronal ridges. Spines on head generally stout, many multifid. Nasal spines multifid, 2–5 points. The preocular, supraocular and postocular spines rather small, the latter generally fused basally with the postfrontal and tympanic spines. The parietal spine single, the nuchal with 2–6 points. 2–3 sphenotic and 2–3 small postorbital spines. Pterotic spine with 4-7 points, also the posttemporal. Humeral spine a serrated ridge. 2 divergent apically multifid opercular spines. 4 preopercular spines, upper with small basal spine. Suborbital stay 2–3 ridged with numerous spines, a deep pit above in front below eye. Preorbital with 7–9 spines disposed radially. Mouth moderate, maxilla reaches almost below hind margin of eye. Lower jaw projects, with prominent symphyseal knob. In upper jaw, villiform teeth in fairly broad band, widely separated at symphysis by a fleshy knob and ridge that are part of a skinny transverse membrane across mouth between jaw and vomer, its middle part black. Inner front teeth enlarged, retrorse. In lower jaw similar teeth in a band, barely separate at symphysis, inner series of teeth enlarged, retrorse A black patch behind front teeth. Vomer with irregular narrow band of small teeth in a patch on hind part of each limb, none on head of vomer in adults, juveniles have small teeth there that vanish with age. Palate edentate. Tongue apically free, narrowly rounded. Dorsal inserted above opercle, 1st spine shortest, 3–5th longest, 12th spine 1.1–1.3 times 11th. Anal inserted before soft dorsal origin, 2nd spine little longer than 3rd and stouter. Pectoral reaches near, to or beyond anal origin, pelvic not to anus. Caudal gently rounded. Scales ctenoid above L.1. as well as some below L.1. below spinous dorsal, remainder mainly cycloid. Cycloid scales below lower basal part of pectoral, round pelvic bases, prepectoral and on chest, almost covered by skin. No scales on soft dorsal or anal, at most one basally. Concealed cycloid scales on upper part of opercle, down behind eye and on cheek. Interorbital and most of head naked, often papillose or ciliate.

Colour, alive: variable, mimetic to weed-draped rock or coral, generally drab, underlaid reddish, mottled and marbled in green, yellow, maroon and white. Skinny flaps usually greenish. Dorsal greenish to red with orange mottling. Anal maroon or brown, spotted and marbled, often a wide brown bar across middle. Caudal basally pink to brown as vague cross bar, then pinky white bar, next wide maroon bar streaked green and white. Distally pinky brown with white streaks. Pectoral basally with maroon and green motlings, body of fin dark maroon brown, distally yellowish with orange tips. Underside of pectoral basally blue, then vivid orange, with black spots, bordered distally by a black bar, this brown below, fin distally yellowish white. Pelvic mostly dark maroon with lighter maroon-orange areas basally and distally. Iris brilliant orange. Chest green and pink.

Described from numerous specimens, 35–210 mm. in length, ranging from Port Alfred (33° 35'S. x 27° E.) all along the East African coast, and at all islands to Seychelles, mainly from among rocks or coral, not uncommon. Often confused with **Synanceja** Bloch, by natives and others, its painful but non-fatal stings induce carelessness and partly responsible for **Synanceja** fatalities.

Genus **Dendroscorpaena nov.**

Scorpaenichthys Bleeker, 1862 preoccupied, **(Scorpaenichthys** Girard, 1854.) Genotype **Perca cirrhosa** Thunberg, 1793. 12 dorsal spines connected by membrane, 8–10 rays. Anal insertion usually below or behind soft dorsal origin. Scales ctenoid or cycloid, or both, moderate to small, imbricate. Lateral line complete. Teeth on vomer, none on palatines. Interorbital narrow, no deep pit below eye, spines on head normally not multifid. Basisphenoid with feeble ventral process. Body normal. Several small to moderate sized fishes of the tropical Indo-Pacific, the species need revision, 2 in our area.

A. 45–55 scales along above lateral line, 7 or more series above, 7–11 predorsal ..... **cirrhosa**
B. Less than 40 scales along above lateral line, 4 series above, 2 predorsal..... **gilchristi**

Dendroscorpaena cirrhosa (Thunberg), 1793.
(Plate IV, B)

Scorpaena cirrhosa Temminck & Schlegel, Fauna Jap. 1843, 42, XVII, figs. 2–3. Gunther, Fische, Sudsee, 1875, I, 78, fig. Pl. 54.
Scorpaenopsis rosea Day, Fishes India, 1878, 151, Pl. XXXVI, fig. 4.
Scorpaenopsis novae-guineae Bleeker, Verh. Akad. Amst. 1876, 34, Pl. 4, fig. 3.
Scorpaenopsis cirrhosa, Matsubara, Trans. Sigen. Kenk. 1943, II, 320, fig. 112. Herre, Phil. Journ. Sci. 1952, vol. 80, 413. Smith, Sea Fishes .SA. 1949, 371, Pl. 85, fig. 1042.

Highly variable in squamation, ciliation of head and body and to some extent in form.

D XII 8–10. A III 5. Pectoral with 1–2 upper and 10–12 lower rays simple, the inner 4–6 divided, total 17–18 normally 17. 44-54 scales above L.1. Tr. 7–8/16–18. Predorsal 7–11. Gillrakers mostly knob-like, all spinate, on upper limb of arch 4 knobs and normally one flat raker; the longest raker in angle, in front a typical bifid raker, anteriorly 8–9 spiny knobs, total on lower limb 10–11. In percent of standard length: depth 29–35; head 40–44; eye 7–8; interorbital 5–7; 3rd dorsal spine 15–19; 4th 16–20; 11th 4.5–7; 12th spine 10–14; 4th dorsal ray 15–18, 2nd anal spine 17–23; pectoral 26–32; pelvic 21–27.

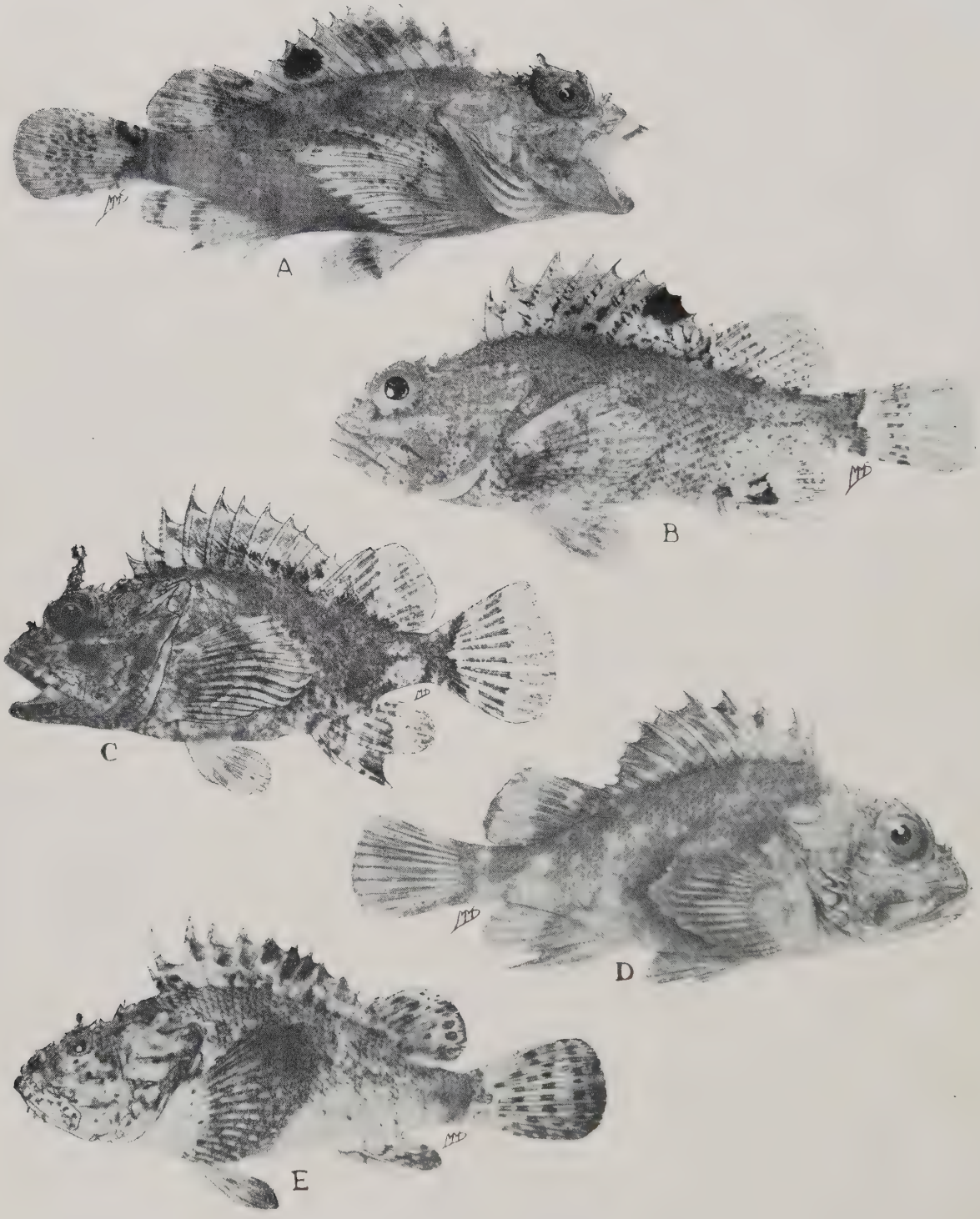

PLATE II.

(A) Parascorpaena maculipinnis n.sp. Type, 56mm. (B) Sebastapistes nuchalis (Gnthr). 95mm. (C) Parascorpaena aurita (Ruppell). 108mm. (D) Sebastapistes kowiensis (Smith). 80mm. (E) Scorpaena scrofa Linn. 205mm.

PLATE III.

(A) Hypomacrus albaiensis E. & S. 80mm. (B) Sebastapistes oglinus (Smith), 70mm. (short tentacle). (C) Sebastapistes oglinus (Smith), 80mm. (long tentacle). (D) Scorpaenodes varipinnis n.sp. Type, 75mm. (E) Scorpaenodes corallinus n.sp. Type, 99mm.

Body moderately compressed. Head and body normally with numerous cilia, variable, sometimes few or absent. Multiciliate flap at front nostril. Some smaller fishes have prominent fringed cilia at the 2nd supraocular, in some longer than eye, in larger fishes this tentacle is short or absent, also in some juveniles. Outer ring of iris with filaments. Interorbital deep, narrow, broadens with age. Coronal ridges feeble, no spine. A transverse quadrangular depression across occiput. Spines on head prominent, multifid only as abnormality. Paired spines are: nasal, preocular, supraocular, postocular, tympanic, parietal, nuchal, pterotic, 1–3 posttemporal, humeral, 0–2 small postorbital, 1–4 spenotic. Postfrontal spines rarely present, then feeble. In adults supraocular, postocular, tympanic and rudimentry postfrontals fused badly in a group. 2 divergent opercular spines 4–5 preopercular spines, upper largest with small basal spine. Suborbital ridge single with 3 equidistant spines. Preorbital with a small median retrorse spine, 2 anterior antrorse and one posterior retrorse spine.

Mouth moderate, maxilla reaches to ór near level of hind margin of eye. Lower jaw projects slightly, a slight symphyseal knob. In upper jaw villiform teeth in a moderate band, bands well separated at symphysis by a fleshy ridge, part of a membrane between jaw teeth and vomer. A few inner front teeth enlarged. In lower jaw similar teeth in a band, band closely adjacent at symphysis, inner series enlarged, fine teeth in narrow angular band right across vomer. Palatine edentate. Tongue apically free, rounded.

Dorsal inserted above or before opercle, 1st spine shortest, 3–5th longest, 12th spine normally about twice 11th. Soft rays about equal longest spine. Anal inserted usually behind soft dorsal origin, 2nd spine little longer than 3rd. Pectoral and anal rarely reach beyond anus, not to anal origin. Caudal gently rounded.

Scales ctenoid over most of body, sometimes with minute auxiliary scales, cycloid along anal base, on belly, round pelvics, on chest and most of prepectoral, these front lower scales small and embedded. No scales on soft dorsal or anal. Scaling on head variable. In some specimens visible ctenoid scales on most of opercle, behind eye, below suborbital stay, and above to nostrils, the interorbital and snout with small smooth or ciliate scales, not imbricate, some even in occipital depression. In others no scales visible on head, but concealed cycloid scales on opercle, behind eye and on cheek, none in advance of hind margin of occipital pit, while the head skin shows a complex system of pores. Hinder predorsal scales ctenoid, normal, the anterior few series concealed.

Colour: Variable, basically red or rosy, lighter below, whole body with irregular darker markings, sometimes forming vague cross bars. Fins reddish, most with irregular darker spots and bars. Sometimes a black area over 7–10th dorsal spines. Pectoral rays apices and iris scarlet. Filaments bluish or green, those above eye reddish.

Described from numerous specimens 57–250 mm. in length, from Natal northwards along the east African coast, at all islands to Seychelles. Recorded from a wide area of the tropical Indo-Pacific.

Previous workers somewhat doubtfully recognise **novae-guinea** Cuvier, 1829, as distinct from **cirrhosa,** solely on scale count, giving about 45 series in the former and 50–60 in **cirrhosa.** This is however a polymorphous form for while isolated workers could easily regard individuals among my specimens as distinct species, I cannot divide them save possibly on scale count alone. The squamation is variable, the counts range over 44–54, and some specimens vary by as many as 4 between the two sides. All show 7–8 series above the L.1. Even more variable is the squamation on the head which sometimes appears naked, or is highly scaly. There appears to be no other feature to support division at the artificial line of 50 series of scales. Similarly I cannot find any other feature to support differentiation of the few having a long tentacle above eye. One specimen, 100 mm. in length, from Delagoa Bay, that agrees almost exactly with the diagnosis and figure of **Scorpaenopsis rosea** Day (loc. cit. above, 1878), with long supraorbital tentacles and L.1. 51, is otherwise exactly like the others. Its pectoral does not reach to the anal as shown in Day's figure.

The species here described as **cirrhosa** is only an occasional capture in the Western Indian Ocean. It is clearly less abundant than **gibbosa** Bloch.

Dendroscorpaena gilchristi n.sp.

D XII 9. A III 5. P 1 + 4 + 11 = 16. Scales, rows above L.1. 34, 22 tubular. Tr. 4/10. 2 predorsal. 7 Branchiostegals. Gillrakers 3 + 1 + 9.

In percent. of standard length: Total length 122, depth 39, head 42, eye 11, interorbital 5, snout 12, postorbital 20, 1st dorsal spine 7, 3rd 15, 4th 16, 11th 9, 12th 13, 4th dorsal ray 19, 2nd anal spine 16, pectoral 30, pelvic 22, depth of peduncle 12.

Body compressed, snout short, rather blunt (distorted). Anterior nostril with dilated multiciliate flap. Flaps on each side of snout and on various parts of head. Short filament on preocular spine, supraocular with large fleshy fimbriate tentacle, longer than eye. Pre and postocular spines each with small flap. On upper gillarch two spinate knobs with short spiny raker below, the raker in angle longer, apically dilated and spinate, in front 5 gradually shorter similar rakers, anteriorly 4 spinate knobs. Interorbital deeply concave with prominent coronal ridges, no spine. The frontals end behind eye in a prominent transverse ledge that overhangs a quadrangular occipital depression, no postfrontal spines. Nasal spine stout, with transversely wide base. Other pairs of spines present are: preocular, supraocular, postocular, tympanic, pterotic, posttemporal, humeral, parietal nuchal. Several small sphenotic spines and a cluster of minute postorbitals. 3 divergent opercular spines. Five spines on preopercle margin, the upper with extra small spine at base. Suborbital ridge double below eye, with one spine below and one behind. Preorbital with 5 spines, 2 in front and one median lower all antrorse, the hinder two retrorse, lower with

skinny flap. Mouth moderate, maxilla reaches below hind third of eye, hind margin truncate. Villiform teeth in narrow bands in each jaw, broader near symphysis with a few teeth little enlarged. Vomer covered with a fleshy fimbriate membrane, with a few small teeth on the head and along front margin. Palatines edentate.

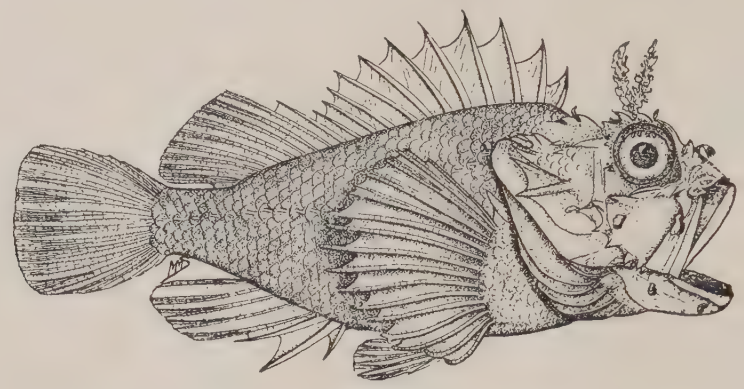

Fig. 4.

Dendroscorpaena gilchristi n.sp. Type. 75 mm.

Dorsal inserted over mid opercle, the spines increase to the 4–5th, subequal, decrease to the 11th, the 12th, 1.7 times as long as 11th, almost as long as 4th spine, the soft rays higher than the spines. 2nd and 3rd anal spines subequal, the 2nd stouter. Pectorals with one ray above and 11 below simple, the inner 4 divided, reach beyond anal origin. Pelvics reach anal origin. Caudal gently rounded.

Scales finely ctenoid on body, cycloid along anal base and on belly. Below lower part of pectoral base, round behind pelvic bases, and on chest and pectoral base, the scales are cycloid but completely concealed by skin. No scales visible on head. Two almost concealed series before dorsal, nape to occipital depression covered with highly porous rough skin. Upper part of opercle with rough skin, with 2–3 series of concealed cycloid scales below skin, a single series of 2–3 large irregular scales down behind eye, beneath skin, head otherwise naked. No scales on vertical fins.

Live colours unknown. As preserved uniform yellow brown.

Described from the type, a single specimen 75 mm. in length from 14 fathoms off the Tugela River, in the collection of the S.A. Museum, Cape Town, previously identified as **Scorpaenopsis rosea** (Day). This species is related to **Scorpoenopsis cotticeps** Fowler, 1938, from the Philippines, but that species has 26 series of scales, 6 predorsal scales, and 14 pectoral rays, all simple.

Named in honour of J. D. F. Gilchrist, the father of South African ichthyology and the pioneer investigator of the rich resources of our seas.

Genus **Rhinopias** Gill, 1905

Genotype **Scorpaena frondosa** Gunther, 1891. Dorsal of 12 spines connected by membrane and 9 soft rays. Body greatly compressed, covered with minute cycloid scales, head and fins naked, lateral line runs to caudal base. No palatine teeth. No nasal spines. (Compiled). **Peloropsis** Gilbert, 1905 is a synonym. A single species from Mauritius, possibly also Hawaii (see below).

Rhinopias frondosa (Gunther), 1891.

(Plate IV, C)

Scorpaena frondosa Gunther, Proc. Zool. Soc. Lond. 1891, IV, p. 482, Pl. 39.

The following compiled, no specimen available. D XII 9. A III 5. 8 upper pectoral rays divided, 8 lower simple, thickened, total 16. (Possibly 16–18). Scales cycloid or feebly crenulate, small, about 70 series, none on head. Gillrakers low spiny knobs, few. Head and body much compressed, cheeks hollow. A bony crest each side of occiput, where marked depression. Spines on head poorly developed, no nasal spine, no true spines on preorbital or preopercle margin. No coronal ridges. Interorbital equals eye. Body and fins with numerous cilia and flaps, some on iris. Mouth large, maxilla reaches below eye. Villiform teeth in bands in each jaw and in angular band on vomer, none on palatines. Dorsal originates above preopercle margin, 3–4th spines longest, membrane deeply incised, fin deeply notched before rays. Pectorals reach well beyond anal origin, pelvics to anal origin. Caudal rounded. Stated as brownish (preserved) with irregular rounded greyish brown-edged spots. A white spot on cheek, on base of pectoral and near caudal base. Black ocellus on hind part of soft dorsal. Known only from the holotype, 7⅓ inches long, from Mauritius. **Peloropsis xenops** Gilbert (Bull. U.S. Fish. Comm. 1903 (1905), II, 630, f.245), from Hawaii, is almost certainly identical. **Rhinopias** has 6 months preference over **Peloropsis**.

Genus **Parascorpaenodes nov.**

Genotype **Parascorpaenodes hirsutus n.sp.,** from Bazaruto, East Africa. Small fishes. Body and most of head, also bases of vertical fins, scaly, mostly ctenoid, cycloid on belly, not more than 30 series above lateral line, hinder part of which is irregular. Thirteen dorsal spines, 8 rays. Mid upper pectoral rays divided, lower simple rays thickened, none abruptly longer. Teeth on vomer, not on palatines, tongue slender, free. Paired spines as described for the Type (below), the pterotic unusually far up on side of cranium. Gillrakers few, short, some rudimentary. Two species, the Type, and **kelloggi** Jenkins, 1902 from Honolulu.

Parascorpaenodes hirsustus n.sp.

(Plate I, E. Fig. 5)

D XIII 8. A III 5. Pectoral with 1–2 upper and 10–11 lower simple, 4–5 inner rays divided, total 17. About 29–30 series of scales above L.1, about 23 tubular scales, 3–4 series below 4th dorsal spine, above L.1. 8 series from anal origin up. 3–4 series predorsal, end at apex of nuchal spine. On upper limb of outer gill-arch 4 knobs and one raker, the longest raker in angle, then 5–6 rakers on lower limb, diminishing anteriorly, the anterior knob-like, the front third of surface of arch bare, total on lower limb 6–7.

In percentage of standard length: total 125; depth 30–32; head 33–35; eye 9–11; interorbital 4–5; snout 9; postorbital 18; spinous dorsal base 38; soft dorsal base 15; 1st dorsal spine 4–5; 4th 9–10; 5th 10–12; 12th 3.5–5; 13th dorsal spine 7–8; 3rd dorsal ray 13–14; 1st anal spine 8; 2nd anal spine 14–17; 3rd anal ray 17; pectoral 29–30; pelvic 24; peduncle depth 10–11.

Body moderately compressed, snout rather pointed. A fleshy tentacle at supraocular, simple tentacles at front of snout, and at most spines on head. Other filaments on side of head, small ones on front lateral line scales, all variably present. Flap to anterior nostril with 4–5 long apical digits. Gillrakers digitate, uniformly thick, finely spinulose. Interorbital moderately concave, coronal ridges feeble but distinct, ending in a distinct spine midway on interorbital. Nasal spine small, slender. Pairs of spines present are: preocular, supraocular, postocular, tympanic, pterotic, humeral, parietal, nuchal, posttemporal. Sphenotic spines feeble or absent, no postorbital spines visible, the pterotic unusually high on side of cranium. No postfrontal spines in 4 specimens, one spine in one. Opercular spines subequal. Three spines on hind margin of preopercle, the upper longer and sharper.. Suborbital ridge single, with 4 prominent sharp spines. Preorbital with no pointed spines, only 3 blunt ventral processes over maxilla. Most of iris with filaments and small ctenoid scales.

Maxilla extends below hind margin of pupil. Fine blunt sub-granular teeth in bands in both jaws and in a chevron-shaped band on vomer. Palate edentate. Broad emargination in upper lip at symphysis with a distinct dorsal knob each side. Lower lip not continuous across symphysis, where there is a distinct knob. Tongue slender, free.

Dorsal inserted over middle to hind margin of opercle, fifth spine longest, as long as eye, thereafter shorter, fairly deeply notched before soft fin, the last spine twice the 12th. 2nd anal spine much the longest on fish. Pectoral barely reaches to level of vent, pelvic not so far. Caudal rounded.

Scales feebly ctenoid on most of body and all on head, but cycloid on belly and chest, on bass of soft dorsal, anal and pectoral. Scales on head to nasal spine, sides of interorbital naked. Operculum and cheek fully scaly. The tubes continuous in front ¾ of lateral line, the posterior dispersed, in some specimens at different levels.

Colour: live, bright red, with darker red cross bars, the first over the head, 2nd below the 2–4 dorsal spines, the broadest below hind half of spinous dorsal, 4th below soft dorsal, and last across peduncle and base of caudal, the middle 3 extend on to dorsal, the part on the 2–4 dorsal spines black, forming a distinct blotch. Greenish mottlings on upper part of head and body to end of spinous dorsal, brownish posteriorly. Fins all red, darker red areas extend on to fins from cross-bars. Caudal and anal with few dark red spots, a group at base of pectoral and a dark area in middle of pelvic. Iris scarlet. Preserved: Light cream, a marked black blotch on front dorsal spines, the crossbars and other marks described for the live fish brownish.

Described from five specimens, one 42 mm. in length from Pinda (14° 10′ S. x 40° 40′ E.) two, 47 mm. and 56 mm. in length respectively, from Bazaruto (21° 30′ S. x 35° 30′ E.) the latter the type in this Department, and two 30 mm. and 33 mm. length, from Aldabra.

This species is closely allied with **Sebastopsis kelloggi** Jenkins, 1902 from Honolulu, but differs in colour and markings, in having fewer scales above the lateral line, while **kelloggi** is said to have 19 rays in the pectoral.

Genus **Scorpaenodes** Bleeker, 1857

Genotype **polylepis** Bleeker, 1857. It is advisable to give a revised synoptic diagnosis of this genus: small rough fishes, with D XIII 8–9 and A III 4–6. Mid upper pectoral rays divided, lower simple rays thickened, not abruptly longer than divided rays. Front of snout from above with anterior concavity. Teeth on vomer, not on palatine. Tongue slender, free. Scales ctenoid except on chest. Head scaly except snout and chin. Basal scales on soft dorsal and anal. Paired spines are: nasal, preocular, supraocular, postocular, tympanic, pterotic, humeral, parietal, nuchal, posttemporal, 2–4 sphenotic. Postfrontal and coronal spines sometimes present. Gillrakes few, short some rudimentary. Circumtropical, about 10 species recognised, hitherto only one recorded from the Western Indian Ocean, 4 now recorded, 2 new.

KEY TO THE SPECIES OF THE WESTERN INDIAN OCEAN

I. Not more than 6 finely ctenoid scales between lateral line and base of 4th dorsal spine. Coronal ridge feeble, usually no spine. Sub-orbital ridge with 2–4 spines. Fewer than 45 series of scales above L.l.

(a) Mid-dorsal spines normally distinctly longer than eye, rarely not much. No prominent black mark on spinous dorsal or pectoral, one on opercle may be present.

i. A strong pair of postfrontal spines (behind interorbital). Coronal ridges feeble but distinct, normally without spine. Interorbital lightly scaled. Cilia and filaments feeble or absent. Mainly scarlet with white spots. P 17, rarely 18.... **corallinus n.sp.**

ii. No postfrontal spines. Coronal ridges virtually absent. Interorbital densely scaled. Tentacles and filaments normally present on head, some on body. Mainly brownish with odd dark red marks, vague to distinct cross-bars, a dark spot on opercle usually present. P 18–19..... **guamensis**

(b) Mid-dorsal spines about equal eye. Prominent black blotch on last dorsal spines, a triangular black bar across pectoral, and a black blotch on opercle..... **varipinnis n.sp.**

II. More than 6 rough strongly ctenoid scales between lateral line and base of 4th dorsal spine. Coronal ridge with apical spine. Postfrontal spines present. Suborbital ridge with 5 or more spines. 48–52 series of scales above L.1. The maxilla scaly ..... **Parvipinnis**

Scorpaenodes corallinus n.sp.

(Plate III, E. Fig. 5)

D XIII 8. A III 5. Pectoral with 2 upper and 9–10 lower simple, 5–6 inner rays divided, total 17. About 42 series of scales above L.1, 23–25 tubular scales, 6 series below 4th dorsal spine above L.1., 15 series from anal origin up. 4–6 series predorsal to apex of nuchal spine. On upper limb of outer gill-arch 4 knobs and one raker, the longest raker in angle, then 6 rakers on lower limb, diminishing anteriorly, the anterior knob-like, the front third of surface of arch bare, true rakers 1 + 1 + 6.

In percentage of standard length: total length 120; depth 31–33; head 43–44; eye 10–11; interorbital 3; snout 12–13; postorbital 22; spinous dorsal base 37–40; soft dorsal base 12; 1st dorsal spine 4–5; 4th 11–14; 5th 11–13; 11th 9.5–11; 12th 9–9.5; 13th dorsal spine 8–12; 3rd dorsal ray 14; 1st anal spine 6–9; 2nd anal spine 15–22; 3rd anal ray 16–19; pectoral 26–29; pelvic 20; peduncle depth 9.5.

Body well compressed, snout rather pointed. Rarely a small filament at one or two spines on head, normally none on head or body. Flap to anterior nostril with 4–5 feeble apical digits. Gillrakes digitate, uniformly thick, wholly finely spinulose. Interorbital narrow, concave, coronal ridges feeble, distinct, sometimes a feeble spine. Nasal spine small, slender. Pairs of spines present are: preocular, supraocular, postocular, tympanic, pterotic, humeral, parietal, nuchal, 2 posttemporal, postfrontal, the latter flaring outwards. Four sphenotic spines on each side. Postorbitals rudimentary. The upper opercular spine longer. Only two spines exsert on hind margin of preopercle, the upper longer and sharper, with small spine on base. Suborbital ridge single, normally with 3 small sharp spines. Preorbital with no pointed spines, only 3 blunt ventral processes over premaxilla. Outer margin of iris with asperities and small ctenoid scales, often a small papilla below apex of preocular spine.

Maxilla extends below hind margin of pupil or somewhat posterior, not beyond eye. Fine blunt sub-granular teeth in bands in both jaws and in a chevron-shaped band on vomer. Palate edentate. Upper lip with broad emargination at symphysis. Lower lip not continuous across symphysis, where there is a distinct knob. Tongue slender, free.

Dorsal inserted over middle to hind margin of opercle, 4th–5th spines longest, distinctly longer than eye, thereafter shorter, not deeply notched before soft fin, relative lengths of last two spines variable, tthe last not always longer. 2nd anal spine much the longest spine on fish. Pectoral normally reaches to or beyond anal origin, pelvic not to anus. Caudal subtruncate or rounded.

Scales feebly ctenoid on most of body, but cycloid on belly and chest, on base of soft dorsal, anal and pectoral, on scapular area, on cheek and on occiput, but ctenoid on nape. Scales on head to little before hind margin of eye, interorbital usually with few central ctenoid scales, sometimes fully scaly.

Colour, live: Red or brown red, covered with small irregular subangular white to silvery flecks on about every third scale. A lighter patch 3–6th dorsal spines and another just behind dorsal over peduncle. Spinous dorsal orange-red with brown mottlings. Soft dorsal and caudal rays light and dark alternately, with light red spots. Anal and pelvic bright red with silvery spots or lines. Pectoral bright orange with white streaks. Top of head and snout red brown. Iris with yellowish white reticulations on red brown background. As preserved: Brownish, a light area below front of soft dorsal and over caudal penducle, body and fins with light irregular spots. Fins mottled and speckled in light brown. Iris dark. Vague dark mottlings on head.

Described from 15 specimens 75–105 mm. total length, from Mozambique, Baixo Pinda, Matemo, Tekomazi, Zanzibar and Pemba islands, Kenya, also Aldabra and Assumption Islands. The type, 99 mm. in length, illustrated, from Baixo Pinda, in this Department.

A striking and handsome Scorpaenid, normally found well below low tide mark, usually in 1–5 fathoms, only in coral, rather rare, easily recognisable. Closely related to **gaumensis** Q. & G., but easily distinguished by colour pattern and by the presence of postfrontal spines.

Scorpaenodes varipinnis n.sp.

(Plate III, D. Fig. 5).

D XIII 8. A III 5. Pectoral with 1–2 upper and 10–12 lower simple, 5–6 inner rays divided, total 17–18. About 38–40 series of scales above L.1, 23–25 tubular scales, 4–5 series below fourth dorsal spine above L.1, 12 series from anal origin up. 4 series predorsal to nuchal spines. On upper limb of outer gill arch 2–4 spinate knobs and one raker, the longest raker in angle, on lower limb 5 rakers diminishing anteriorly, then one knob, front third of arch bare. True rakers 1 + 1 + 5, all spiny.

In percentage of standard length; total length 120; depth 34–37; head 39–44; eye 12–14; interorbital 3–4; snout 10–11; postorbital 21–22; spinous dorsal base 42; soft dorsal base 15; 1st dorsal spine 5–6; 4th 12–14; 5th 13–14; 11th 10–11; 12th 8–11; 13th dorsal spine 10–12; 3rd dorsal ray 17; 1st anal spine 7–8; 2nd spine 18–21; 3rd anal ray 20; pectoral 35–36; pelvic 25; peduncle depth 9.5.

Body moderately compressed, snout short, moderately pointed. Rarely a small filament at one or two spines on head, and 1–2 on apex of anterior lateral line tubes, but otherwise none on head or body. Flap to anterior nostril with only 2–3 digits. Gillrakers, digitate, uniformly thick wholly finely spinulose. Interorbital narrow concave, coronal ridges feeble, hardly visible. Nasal spine small, slender. Pairs of spines present are: preocular, supraocular, postocular, tympanic, pterotic, humeral, parietal, nuchal, and posttemporal. Sphenotic spines feeble, the upper opercular spine longer. 2–3 spines exsert on hind margin of preopercle, the uppermost longer and sharper, with small spine on base. Suborbital ridge single, with 2–3 small sharp spines. preorbital usually with no pointed spines, only 3 blunt ventral processes over premaxilla, the hindmost sometimes with spine at apex behind. Iris with asperities, often with a small papilla below apex of postocular spine.

Mouth moderate, maxilla extends about below hind margin of pupil or beyond. Fine blunt subgranular teeth in bands in both jaws, in upper jaw widely separated at symphysis. Similar teeth in a chevron shaped band on vomer, none on palatines. Upper lip with sharp emargination at symphysis. Lower lip not continuous across symphysis, where there is a small knob. Tongue fairly slender, free.

Dorsal inserted over middle to hind margin of opercle, spines increase to the 4–5th, longest, not longer than eye, fin but little notched before soft portion. 2nd anal spine more than twice as long as 1st, clearly the longest on the fish. Pectoral reaches to or beyond anal origin. Pelvic does not reach anus. Caudal rounded truncate.

Scales feebly ctenoid over most of the body, even on chest and on head. Predorsal scales extend through interorbital to level of nostrils. A few scales basally on soft dorsal and anal and on basal 4th of pectoral.

Colour, alive: Basically pink, head with irregular bars and blotches of red, margined darker, opercle black above. Shoulders red and mauve, with scarlet blotches. Large irregular scarlet area from basal hinder part of spinous dorsal along to end of dorsal, across body and extending over basal half of anal, this area with odd small white and mauve blotches. Behind this area pink, with a narrow scarlet bar across end of the peduncle, spinous dorsal opaque white with pink mottlings and basal red marks. A black blotch on the 9–12th spines, red below. Soft dorsal opaque white with pink mottlings and blotches, also distal half of anal. Caudal faint pink with yellow mottlings. Chest and pectoral base orange, first a scarlet bar across base then a triangular black bar, distal body of fin yellow and silver. Pelvics yellow and orange with large black ocellus on distal portion. Iris silvery with fine vermilion vermiculations. Colour preserved: Generally brownish or greyish. Prominent black area on hind part of spinous dorsal, on opercle, and subtriangular bar across pectoral, fin base light. Pelvics dusky, a distal dark area. Fins otherwise dark, mottled, caudal abruptly lighter beyond dark lined base.

Described from 9 specimens, four 30–44 mm. in length from Baixo Pinda, one, 68 mm. in length from Mafia, one, 50 mm. in length from Shimoni, Kenya, two each 50 mm. in length from Aldabra, and the type, 75 mm. in length, from Zanzibar, in this Department, all taken by poisoning in coral. This brilliant small species is clearly distinct from all others in its striking and handsome markings, scale count and in absence of coronal ridge and spine and of postfrontal spines.

An 800 mm. **Pristipomoides microlepis** Bleeker, 1869, taken in 110 fathoms off Memba (14° S. x 41° E.) had in its stomach a 50 mm. long Scorpaenid fish in almost perfect condition. It agrees with this species in general characters and has the black blotch on the 7–12 dorsal spines, but the opercular blotch and the bar across the pectoral are lacking and there are dark spots on the vertical fins. In view of its close correspondence with **varipinnis,** despite the apparently abnormal environment it is tentatively assigned here.

Scorpaenodes guamensis (Quoy & Gaimard), 1824

(Plate I, C. & D. Fig. 5)

Scorpaena guamensis Quoy & Gaimard, Uranie, 1824, 326. Gunther, Fische Sudsee, 1874, II, 74, Pl. 56, f.B.
Scorpaenopsis polylepis Bleeker, Nat. Tyds. Ned. Ind. 1860, XXII, 99.
Scorpaenopsis quiescens. Seale, B.P. Bish. Mus. Occ. Pap. 1906, 80, fig. 2.
Sebastes scabra Ramsay & Ogilby, Linn. Soc. N.S.W. 1885, X. 577.
Scorpaenodes guamensis. Fowler, Fishes, Oceania, 1928, 288. Schultz Bull. U.S. Nat. Mus. 1943, 170. Smith Sea Fishes S.A. 1949, 372, f.1044a.

Numerous specimens from over a wide area of the Western Indian Ocean are here accepted as **guamensis** Quoy and Gaimard, despite considerable polymorphism which does not lead to simple resolution except as outlined below. It may be noted that Schultz (U.S. Nat. Mus. 1943, Bull. 180, p. 170) states of his specimens of **guamensis** from the Pacific "no scales extending upon soft rays of dorsal and anal fin", which requires confirmation.

A brief description of my specimens follows:

In percent of standard length: depth 30–35; head 40–47; orbit 11–13; longest dorsal spine 11–15; second anal spine 16–26.

D XIII 8–9. A III 4–5. Pectoral with 1–2 upper and 10–12 lower rays simple, the inner 5–7 divided, often differ on one fish, total 18–19 (one specimen had P 1 + (10) + 8 on one side). About 42–44 scales above lateral line, 5 between L.l. and base of 4th dorsal spine, about 12 series from anal origin to L.l. 3–4 series predorsal, end at nuchal spine. On upper limb of outer gill arch 4–5 spiny knobs with 1–2 short rakers below, longest raker in angle, on lower limb 6–7 decreasing rakers, anterior 1–2 knob-like, rakers apically dilated and spinate, first 2 in front of angle sometimes bifurcate, front third of arch bare. Coronal ridge feeble, no spine. Paired spines present: nasal, preocular, supraocular, 1–3 postocular (lower smaller), tympanic, 3–6 sphenotic, parietal, nuchal, pterotic, posttemporal, humeral. No postfrontal spine, (except as rare abnormality. 4–6 small postorbital spines. 3 marginal preopercular spines, the upper with small spine on base as well. Suborbital ridge single, usually with 3 spines, rarely 2 or 4. Preorbital with posterior lower spine, **(scabra)** or hind lower edge rounded (see below). Filaments to spines on head variably present, sometimes also at end of anterior lateral line tubes. Both jaws with fine teeth in bands, those of upper widely separated, the lower with raised dentate areas at front. Dorsal spines variable, 3–5th longest, barely longer than eye to 1.6 times eye, relative lengths of 12–13th also variable, latter always longer. 2nd anal spine variable, 1.5–2.2 in head, probably longer in males (see below). Pectoral reaches beyond anal origin in young, not to origin with age, 9–10th ray longest. Scales smooth, with fine ctenae, cycloid on breast and fins. Most of head with small rough scales, minute on snout, sometimes scanty there. Maxilla often with few scattered rough scales, occasionally odd embedded cycloid scales. Chin naked. Interorbital generally with small rough ctenoid scales extending to nostrils. Outer half of iris usually covered with small rough ctenoid scales, and 1–4 fringed flaps below apex of preocular spine. Scales on base of all fins except front of spinous dorsal, few on pelvic.

Colours in life variable in shades according to environment, but generally a dark fish. Ground colour of body dirty yellow, almost covered with dark mottlings and indefinite cross bars, marks on head and shoulders green-black, those behind pectoral dark red. Juveniles often have more sharply defined posterior cross-bars. Belly, chest and chin light yellow with red-brown markings, sometimes all dark. Spinous dorsal darker than other fins, basically yellow with red and brown markings. Soft dorsal, anal and pectoral deep cream with orange-red markings. Pectoral yellow, orange terminally, maroon basally. Pelvic yellow with red spots. Sepia ocellus on opercle usually present. Iris with orange to red bars on silvery. Preserved: Generally dark brown with lighter mottling, sometimes as irregular cross bars, more apparent posteriorly, chin and chest sometimes lighter. Mostly a dark spot on opercle. Fins mottled, barred and spotted. At the extremes are two types, one a very dark fish with indications of 2–3 darker cross bars towards the caudal. Fins lightly spotted. (Plate I, D). The other is a lighter fish, body and fins mottled and spotted. (Plate I, C). A dark ocellus on the opercle variably prominent in each type. There are all sorts of intermediate gradations, all found in each of the two groups indicated below.

Described from more than 100 specimens, 50–120 mm. in length. Clearly widespread in the tropical Indo-Pacific and previously known from the Red Sea, Madagascar, and Natal, this species is now recorded from the whole of East Africa and all islands to Seychelles. It is variable in colour and general features. The snout grades from quite smooth to rough, scales are sometimes present on the maxilla, usually in larger fishes. The length of the spines in dorsal and anal varies widely, as also the minor postorbital spination.

Scorpaenodes scabra Ramsay & Ogilby, 1885, initially from Australia, was founded on a specimen closely allied with **guamensis** Q. & G., but held to differ in having a longer 2nd anal spine and a rough body and head. Most workers dismiss **scabra** as a synonym of **guamensis,** but this is not certain. With the exception of a few that are not sharply defined, or not symmetrical in the nature of the hind lower preorbital spine, my specimens mentioned above may be divided into two groups, which are differentiated as follows:

	guamensis	**scabra?**
Lower hind corner of preorbital	Rounded	Ends in spine
2nd Anal spine		
% standard length	16–24 (Average 20)	17–25 (Average 23)
Longest dorsal spine		
% standard length	12–14	14–18
Longest dorsal spine, with orbit	About equals orbit	Distinctly greater than orbit

In general the postocular spine in the **"guamensis"** group is smaller than the tympanic spine, whereas in the **"scabra"** group these are subequal. Otherwise the fishes in the two groups are apparently identical, each group variable within itself in normal characters such as depth of body and head length. It is significant that while I find some females with ova among the **"guamensis"** (rounded preorbital) group, (the remainder spent fishes), there are none among my specimens of the **"scabra"** (spiny preorbital) group, all being spent fishes, and from the same areas. The two main types outlined above are illustrated in Plate I, D being the **"guamensis"** type, a ripe female, C is the **"scabra"** type, a spent fish.

It is possible that **guamensis** exhibits sexual **dimorphism,** the males having a preorbital spine and longer spines in dorsal and anal. Most of my specimens were taken in the latter half of the year, clearly not long after spawning, which renders the determination of sex in small fishes difficult. This matter will be further investigated when suitable material becomes available.

Scorpaenodes parvipinnis (Garrett), 1863.

(Plate I, A. & B. Fig. 5)

Garrett, Proc, Cal. Ac. Sci. 1863, 105. Gunther, Fisch. Sudsee, 1874, II, 75, Pl. 75, fig. D. Fowler, Fishes Oceania, 1928, 290. Schultz, Bull. U.S. Nat. Mus. 1943, 171.

D XIII 8–9. A III 5. Pectoral with 1–2 upper and 9–12 lower simple, 3–7 (juveniles 3–4) inner rays divided, total 17–18. About 48–50 series of scales above L.l, 8–9 series below 4th dorsal spine above L.l. 8-9 series before dorsal origin to nuchal spines. 1 + 1 + 5–6 spiny gillrakers with 3–4 knobs above and 1–2 below. In percentage of standard length, depth 34–37, head 41–45, eye 10–14, longest dorsal spine 9–11, second anal spine 15–22.

Body but little compressed, the fish generally rough and spiny. Coronal ridges short with strong spine. Opercular spines subequal. Pairs of spines present are: nasal, preocular, supraocular, 2–3 postocular, tympanic, pterotic, humeral, parietal, 2 posttemporal, nuchal. Small postfrontal spines usually present, variably one on each side, rarely 2 on one side or absent. 3–7 sphenotic spines 4–6 feeble postorbital spines. Preorbital without spines below, 2–4 small spines on upper part below nasal. Suborbital ridge with 6–9 spines. 3 exsert preopercular spines, upper largest, usually with small spine on base; a fourth lower blunt spine sometimes present. Almost every spine on head with small simple filament. Margin of preopercle ciliate, also opercle, especially above. Skinny flaps on lower and hinder edge of preorbital. Maxilla extends almost below hind margin of orbit, lower jaw included, a distinct knob at symphysis of lower jaw. Small granular teeth in bands in each jaw, those of upper exsert when jaw closed, the bands separate. Similar teeth in small triangular patch at apex of vomer. Head and body covered with rough ctenoid scales, those on snout minute, separate. Maxilla scaly. Chin naked. Outer margin of iris with small rough scales. Basal scales on all fins except front of spinous dorsal. Dorsal spines notably low, never longer than eye. 2nd anal spine variable in length. Pectorals do not reach anal origin, 9–10th ray longest. Pelvics do not reach vent. Caudal rounded.

Colour: live, mainly bright light scarlet, with 2–4 narrow cross bars in darker red, those at caudal base and below soft dorsal most distinct. Head above suborbital ridge and most of upper part of front of body with dark greenish mottlings, fainter posteriorly. Fins scarlet, spinous dorsal with dark green mottling, other fins with dark red spots. Iris pale green with double bright orange bars. Dark red spots on chin and chest. As preserved, pale brown with 2–4 light cross-bars, the posterior more distinct. A dark spot below the 2–3rd dorsal spines and darkish blotches below the 6th, 9th to 12th dorsal spines and below the soft dorsal. Head mottled, several dark spots on lips. Spinous dorsal mottled dark, obliquely barred, other fins light with dark spots, few on pectoral and pelvics. Some specimens with dark spots on chest. A juvenile, 20 mm. in length, was rosy with dark red cross bar over head, a broad bar across body and a narrow bar at base of tail, a red bar across pectoral and a blotch on pelvic.

Described from 19 specimens 20–120 mm. in length. Previously known only from few specimens in a small area of the tropical Pacific, now recorded from Bazaruto (21° 30′ S.) northwards all along East Africa, at Mafia, Zanzibar, Pemba, Aldabra, Assumption and Seychelles, always in coral at about low tide mark. Sharply differentiated from other Indian Ocean species in this genus, my specimens accord so closely with the few available descriptions and figures of **parvipinnis** Garrett, that they are assigned to that species. Schultz (loc. cit. 1943, 171) states postfrontal spines to be absent in **parvipinnis** from Samoa. They are present in most of my specimens, and Schultz's statement requires confirmation.

This Pacific form is a notable addition to the African fauna. A specimen 117 mm. in length (illustrated), from La Digue, Seychelles, is selected as the regional type.

Genus **Hypomacrus** Evermann & Seale, 1907.

Evermann & Seale, Bull. Bur. Fish. 1906 (1907), vol. 26, p. 101.

Genotype the single species **H. albaiensis** E. & S. Generic distinction is undoubtedly justified here, the genus related to **Scorpaenodes** Bleeker, 1857, and now more fully diagnosed as follows: Elongate body covered with ctenoid scales, head mostly scaly, interorbital scaling to nostrils. Nasal, preorbital and postfrontal spines absent. Numerous filaments on head and body, tubes of lateral line with filaments. Dorsal with 13, anal with 3 spines. The pectoral with 8–9 slender subequal upper rays, all but uppermost divided, and 7 lower thickened simple rays of which upper abruptly elongate. Dorsal deeply notched. Vomer partly dentate, palatines not. One small species, previously known only from the Philippines, now shown to occur over a wide area of the tropical Western Indian Ocean.

Fig. 5.

To show spination of head of Scorpaenid fishes.
For nomenclature see Fig. 1.

Hypomacrus albaiensis Evermann & Seale 1907
(Plate III, A, Fig. 2)

Evermann & Seale, **loc. cit.** p. 102, f. 20.

D XIII 8–9. A III 5, rarely 6. Pectoral with 0–1 upper and 7 lower simple, 7–8 inner rays divided, total 15–16. About 40 series of scales above L.1, 23–25 tubular scales, 4–5 series below 4th dorsal spine above L.1, maximum 5 above L.1, 9–10 series from anal origin back and up, 7 predorsal to nuchal spines. On upper limb of outer gill arch 4 spiny knobs and one raker, longest raker in angle, on lower limb 7 rakers smaller anteriorly, on front third of arch 3–4 low spiny knobs. True rakers 1 + 1 + 7.

In percentage of standard length; total length 120; depth 27–30; head 39–40; eye 10–12; interorbital 3; snout 10–11; postorbital 18; spinous dorsal base 37–39; soft dorsal base 15; 1st dorsal spine 3; 4th 10–12; 5th 10–12; 11th 6; 12th 2.8–3; 13th dorsal spine 7–9; 3rd dorsal ray 15; 1st anal spine 6–7; 2nd spine 18–21; 2nd anal ray 18; pectoral 35–38; pelvic 20–21; peduncle depth 9.

Body elongate, obtusely sub-triangular in adults, snout pointed, deep emargination before eye. Nasal tentacle apically dilated, with 6–8 terminal digitate flaps. Fringed tentacles to ocular spines and at most spines on head. A fringed flap on front upper part of iris, which is mostly covered with asperities. 2–3 simple long pointed flaps at hind end of most lateral line tubes, similar flaps on many body scales. Gillrakers slender, not dilated,

spinulose. Interorbital fairly narrow, concave, coronal ridges feeble but distinct, no spine. No nasal spine. Pairs of spines present: preocular, supraocular, postocular, tympanic, pterotic, humeral, parietal, nuchal and posttemporal, all rather feeble. Sphenotic spines barely perceptible, often absent, no postfrontal spines. Opercular spines subequal, or upper longer. Preopercle with 3 spines clearly exsert on hind margin, upper larger, with smaller spine on base, the 2nd below, adjacent, minute. Suborbital ridge single, with 2 small spines. No preorbital spines, only 3 rounded projections over premaxilla.

Mouth large, maxilla extends variably below hind margin pupil to hind edge eye. A knob at symphysis of lower jaw, variably prominent, lower lip not continuous. Upper lip narrows in front. Teeth feeble, villiform, in bands in each jaw, and usually in 2 angularly inclined patches on vomer, not or seldom connected across front. Palatines edentate. Tongue slender, free.

Dorsal inserted over middle to hind margin of opercle. Spines increase to the 4th, usually subequal to 6th, longest, distinctly longer than eye, thereafter shorter to 12th, shortest, rarely half of last spine, fin deeply notched before soft portion. 1st anal spine never half of 2nd which is longest in any fin. Caudal feebly convex. Pectoral with total 15–16 rays, 0–1 slender simple rays above, then 7–8 slender branched rays, subequal, almost twice eye diameter, hind margin of this part of fin almost vertical, then below 7 thickened simple rays, upper (9th or 10th) abruptly longest, 1.5–1.8 times length of branched rays, reach to or beyond anal origin, lower pectoral rays graduated shorter, the lowest less than eye. Pelvics not to vent.

Scales ctenoid on most of head and body, except on front of chest, where small and cycloid. Predorsal scaling through interorbital to nostrils, cheek and opercle scaly, snout and chin naked. A few basal scales on dorsal and anal, basal 5th of pectoral scaly.

Colour, alive: dark red-brown markings covering most of a pinkish red body background. Belly, chin, lips, and all fins bright scarlet. Greenish basal blotches on dorsal. Dark brown ocellus on interopercle. Colour, preserved: mainly dark brown with several irregular darker cross bars. Dark ocellus on interopercle. Fins mottled.

Described from 38 specimens, 30–90 mm. in length. Previously known from only 2 specimens, 2.5 and 2.25 inches in length, from Sorsogon, Philippines, now recorded from a wide area of the Western Indian Ocean, from Bazaruto (21° 30′ S.) to Kenya, at Zanzibar, Pemba, Mafia, Aldabra and Assumption, always in coral, down to 5 fathoms, nowhere abundant. My specimens differ in certain particulars from Evermann & Seale's original (1907) description (apparently the only one) notably in stated scale counts; viz: "scales 5–23–13, about 16 tubules in lateral line". The figure (**loc. cit.** 1907, fig. 20) however shows 38–39 series of scales above lateral line, with tubules ending below soft dorsal, the latter probably abnormal. The original authors did not note absence of nasal spines nor the peculiar filamentation of lateral line and body scales. From their figure however, I have no hesitation in identifying my specimens with this Philippine species, representing a most interesting addition to the fauna of the Western Indian Ocean, where it is clearly widespread. A specimen 78 mm. in length from Zanzibar, illustrated, is selected as the regional genotype, in this Department.

Genus **Phenacoscorpius** Fowler, 1938

Genotype **P.megalops** Fowler, 1938. Head and body with ctenoid scales, lateral line on few front scales only. 12 dorsal spines, connected by membrane, 9 soft rays. Spines on head well developed, 5–6 on suborbital stay. Palatine teeth feeble or absent. Two species, both from deep water, the type from Philippines, that below from Gulf of Aden.

Phenacoscorpius adenensis Norman, 1939
(Plate IV, A)

Norman, John Murray Exp. B.M. 1939, VII, 94, fig. 29.

Compiled, no specimen at hand. D XII 9. A III 5. 2–3 upper and lower 11 thickened pectoral rays simple, 3–4 inner divided, total 17. 6–7 scales from dorsal origin to L.1, no other counts given, none shown on figure. L.1. on first 5 scales only. 14 gillrakers on lower part of outer arch. No filaments on head except 3 cilia above eye. Spines well developed, 6 on suborbital, 4 on preopercle flange, 2 on preorbital. Interorbital half of eye. Mouth moderate, maxilla reaches below middle of eye. Villiform teeth in bands in jaws and on vomer, band on palatine equals ¼ eye. Dorsal originates over mid opercle, 3rd spine longest, deeply notched before soft fin. Apices of lower pectoral rays free from membrane, fin reaches anal origin, pelvics not so far. Caudal rounded. As preserved yellowish brown. Described from the holotype, 100 mm. in length from 140–148 fathoms, Gulf of Aden.

Fowler (Proc. U.S. Nat. Mus. 1938, vol. 85, p. 70) states no palatine teeth in the type, **megalops,** whereas Norman **(loc. cit.)** finds some present in **adenensis.** The two species are otherwise so similar that generic cleavage on this feature alone is scarcely justifiable.

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PLATE IV.

(A) Phenacoscorpius adenensis Norman. (After Norman). (B) Dendroscorpaena cirrhosa (Thunberg). 200mm. (C) Rhinopias frondosa (Gunther). (After Gunther). (D) Pogonoscorpius seychellensis Regan. (After Regan). (E) Scorpaenopsis gibbosa (Bloch). 160mm. (F) Parascorpaena picta (Cuvier). (After Bleeker).